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ABSTRACT

The results of a survey of four kinds of television-based educational programs are presented. The study examined the developmental steps which preceded the production of Sesame Street by Children's Television Workshop, of the Chicago TV College, of Telekolleg of Germany, and of the Advocates: the aim was to identify developmental models to be used in connection with the creation of a new career education program aimed at women in the home and sponsored by the United States Office of Education. The first section of the report describes a general model of program development which includes the common phases of planning, development, operations and evaluation. Following this, summary case studies of the four individual programs are provided. The conclusion is reached that if a program can be based upon an existing organization, if it requires neither extensive research nor complex programing, and if objectives, target audience and methods are known in advance, then an effective television-based educational program can be developed in a short time. If these conditions aren't present then the developmental phase will be long and costly. (PB)

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MODELS OF TELEVISION-BASED EDUCATIONAL PROGRAMS: A DRAFT REPORT

Rudy Bretz, John Pincus, Marjorie Rapp and Daniel Weiler

A WORKING NOTE
prepared for the
U.S. OFFICE OF EDUCATION

This Note was prepared to facilitate communication of preliminary research results. Views or conclusions expressed herein may be tentative and do not represent the official opinion of the sponsoring agency.

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PREFACE

This is the first draft of a study prepared at the request of the Division of Research and Development Resources of the U.S. Office of Education. It is based on a survey conducted in New York, Chicago, Munich, and Los Angeles during July 1971.

The aim of the study is to present models of the development of television-based educational programs, to be used in connection with requests for proposal for a new U.S.O.E.-sponsored career education program aimed at women in the home. The report presents both a general model and summary case studies of individual programs.

The authors wish to acknowledge the assistance and cooperation provided by the staffs of the Children's Television Workshop, the Bayerische Rundfunk, TV College of Chicago City Junior College, and KCET, Los Angeles. We owe particular debts of gratitude to Robert Davidson and David Connell of CTW, Dr. Michael Schmidbauer of the International Institute for Youth and Educational Television in Munich, Dr. Walter Fuchs of *Telekolleg*, James J. Zigerell of *Chicago TV College*, and Victor Palmieri and Tom Burrows of *The Advocates* staff.

The schedule for this report allowed one month for survey and writing. A revised version will be issued to correct inevitable errors of fact and emphasis occasioned by our schedule.

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SUMMARY OF KEY FINDINGS

The four television-based educational programs that we surveyed during a three-week period in July 1971 — *Sesame Street* (produced by Children's Television Workshop), *Chicago TV College* (Chicago City Junior College), *Telekolleg* (Bayerische Rundfunk), and *The Advocates* (WGBH and KCET), varied widely in their development strategies, including objectives, methods and scale of operation.

- *Sesame Street* involved the establishment of a new organization on a twenty-month developmental cycle (March 1968 - November 1969), with a $7.2 million budget, aimed at a national audience of three- to five-year old children through a daily one-hour show with the aim of improving various skills and influencing specified attitudes.
- *Chicago TV College* aimed at adults in the metropolitan area seeking junior college degrees or subject-matter skills, and operated on a very short development cycle (two months), with an initial annual budget of about $350,000, with coordination of TV lectures, written materials and regular class meetings.
- *Telekolleg*, in effect a joint venture of the Bavarian television network and the Bavarian Ministry of Education, offered career education through high school-equivalency vocational training programs (typically 78 lessons per course per year) and special skill training for a wide audience in Bavaria and neighboring states, on a $1.2 million annual development budget, using a combination of TV lessons, written materials, and group meetings.

- o *The Advocates*, an educational network public affairs program, aimed at informing a national adult audience on the issues surrounding major public policy questions through a weekly one-hour show produced by two educational TV stations on a first-year developmental budget of $2.4 million.

Common Elements

Given these variations in aims, audiences, methods, and financing, the programs shared only a few common characteristics. These included:

1. The elements common to developing any new television venture--(a) initial planning including determination of *target audience* and general *program format*; (b) program development, including *distribution arrangements, public information*, and so on; (c) *production* of programs (and in some cases, ancillary materials); (d) *evaluation and feedback* arrangements for adapting shows in light of audience reception.
2. In each case, an early recruitment of *a competent core staff* (executive producer, senior writers and senior researchers, etc.), which was given substantial freedom to develop and produce the program as it saw fit.
3. *Selection of air time* that was well suited to target audience needs, and in the case of instructional programs, arrangements for frequent rebroadcast if possible.
4. Strong emphasis on a professional television approach with *appropriate regard for entertainment values* (or in the case of programs tied to skill-training for degree-granting institutions strong emphasis on clear, brisk presentation, with substantial use of visual aids and filmed materials).

5. *Sufficient financing* to allow for high-quality staffing and production.

These common elements of planning, development, operations, and evaluation, discussed in Chapter I of this report, constitute the general development model.

Key Elements of Individual Programs

In addition to these common elements, there were important elements that were characteristic of different types of shows. For example, skill development programs that lead to award of degree or certificate invariably make use of television lectures plus extensive supplementary materials, such as written texts, telephone conferences with lecturers, regular seminar meetings, etc. On the other hand, shows that do *not* have a "captive" audience of people who want to learn specific skills for a degree rely much less on these methods, and embed their educational objectives in a format designed to entertain the viewer.

Key elements in the development of each show, in addition to the general ones cited above, can be characterized as follows:

Sesame Street --

- Identification of the people and skills required to form the nucleus of Children's Television Workshop, as a new organization combining entertainment and educational values.
- Sufficient funding to allow an intensive 18-month development period, so that the needs and responses of the target audience could be identified.

- Close working relations between research and production staffs, thereby allowing the results of an extensive research and evaluation program to be translated into programming.
- A substantial effort in public information and audience promotion, both nationally and at the community level, which succeeded in capitalizing on widespread recognition of the importance of early childhood education for the disadvantaged.
- Successful use of a format that appeals to children -- a rapid paced magazine format, with professional animation and film sequences.

Chicago TV College --

- The ability to call on the resources of Chicago's well-established community college system.
- Extensive and varied two-way communication between faculty and students.
- Continuous improvement in course content and method in response to audience feedback.
- Response to a felt need for educational programs by a motivated audience (women with young children, workers seeking career skills, etc.).

Telekolleg --

- Close ties to the established educational system, including tie-in for award of high-school equivalent degree, which has substantial career value.

- o Systematic multi-media approach which allows for a variety of student-faculty interaction and reinforcement effects provided by multiple media.
- o Responsiveness to the need of a target audience, which, as in the *Chicago TV College* case, is highly motivated but unable to attend regular schools (workers, rural residents, women at home, etc.).
- o Close working relations with research institutes on research and evaluation in such fields as audience characteristics and effectiveness of instructional methods.

The Advocates —

- o Development of an effective format based on courtroom-like confrontation methods, to analyze public affairs issues.
- o Careful advance preparation of program issues and careful selection of advocates and witnesses to present the strongest possible case for each side.
- o Use of two production teams, in Boston and Los Angeles, which stimulated interaction and competition in programming.

Special Conditions

It should be noted that the success of particular program approaches was linked to special conditions which may not be applicable generally. For example, *Sesame Street* was developed by a newly-created special purpose organization, which was appropriate in view of the long lead times and the particular objectives of the program. Programs with tighter deadlines and less novel methods might be ill-advised to follow that model.

This particular example implies an important special condition that has a marked effect on the prospects for program success. If a program can (1) be based on an existing organization (as in the case of *Chicago TV College*), and (2) requires neither extensive research nor complex programming with long lead times (*The Advocates* is an example), then effective TV-based educational programs can be developed on rather short time schedule, *if objectives, audiences, and methods are known in advance.* If these conditions do not apply, or if there are substantial doubts about aims and methods, *then the developmental phase must be long and will probably be costly.*

I. THE GENERAL MODEL

The development of all television-based educational programs includes several common elements. Most of these elements are common to all television programming, while a few -- notably appropriate interaction between educators and TV production staff--- are peculiar to those with educational goals.

The common elements can conveniently be described under four headings: *planning, development, operations and evaluation.* In practice, these stages overlap through time. Furthermore, the length of time required and the relative emphasis on each of the four elements varies widely among programs, as described in Chapter II. In particular, there are substantial differences in the development process depending on whether the program is tied to an established degree-granting or skill-training system for a motivated target audience, or, on the other hand, must compete more directly with general TV programming in attracting audience attention. This distinction also affects the use of supplementary materials (written course materials, seminar meetings among students, direct contacts with faculty, tests and examinations, etc.). Supplementary materials are always used (often very extensively) in degree- or certificate-granting programs, and rarely used in other educational programs.

A. STAGES IN THE DEVELOPMENT PROCESS

Appendix II to this report specifies a checklist of stages and components in developing TV-based educational programs. Instead of reviewing that checklist in detail, this section discusses its major elements, and points out the range of variations found in practice.

1. Planning

The planning effort normally is preceded by the pre-planning stage--basic programming or educational concept, identification of key staff, identificiation of possible funding sources, notions about target audience. The preplanning phase is very important, because all successful shows depend on matching an idea with a target audience, and selecting competent staff to carry out the effort. A case in point is *Sesame Street* where the *idea* (applying professional TV entertainment techniques to education), the *target audience* (pre-school children, ages 3-5), and the *key staff* (executive producers, program producers, public relations, chief education consultant, etc.) were identified before submission of the initial application for funds to finance the program.

After the pre-planning phase. the standard planning elements include: (1) *organization of the planning effort* (determination of planning resource requirements, allocation of time needed for planning, and determination of planning task sequence); and (2) *basic planning tasks* (target audience identification, specification of objectives, overall system planning, organization-building, curriculum planning for instructional shows, and marketing).

In some cases (*Sesame Street, Telekolleg*) these two elements can last for up to a year, including considerable overlap with the development phase (see Figure 2, for the *Sesame Street* example). In others (*Chicago TV College, The Advocates*), the preplanning and planning phases were relatively short.

The important issues in the planning phase include choice of organizational form, choice of key personnel, definition of target audience,

definition of methods to be used, planning for air time, and marketing plans.

a. In *organizational form* the important questions are choice of new organization or adaptation of an existing one. In this decision, the relevant issues are lead time available, and adaptability of program concept and approach to the structure and orientation of existing organizations. *Sesame Street*, with nearly two years of lead time, aiming at a novel blend of education and entertainment, could choose to form a new organization. *The Advocates*, offering essentially a new twist to the public affairs panel format, could adapt existing organizations to its needs by forming a collaborative enterprise between two TV stations.

As in every enterprise, *choice of key personnel* is a major determinant of program success. For successful educational television the core staff must include executive staff with substantial television experience. The medium is primarily used for entertainment. Educational programs cannot compete successfully with general programming unless they offer thoroughly professional production. Successful programs invariably include experienced television producers in the core staff, and give them broad responsibility for program development and production. In programs with an important instructional component, there has been emphasis on selection of educators who are capable of learning the instructional uses of the television medium and of defining curriculum goals and methods in ways that are understandable to the production staff.

c. *Defining the target audiences* is particularly important in educational television, because the programming must be designed to

appeal or be useful to specified audiences. *Sesame Street* defined its audience as pre-school children from three to five years of age, particularly poor black children. *Telekolleg* defined its audience as people who sought the technical high school degree but were unable to attend the regular school. Each program then studied in detail the viewing habits and preferences of their target audiences. In educational television, the attempt to appeal to everyone is likely to result in satisfying no one, and, paradoxically, a successful attempt to appeal to a well-defined target group is likely to result in providing an appeal that extends far beyond the original target. For example, *Sesame Street* appeals to adult viewers, and *Telekolleg* commands a wide audience among people who have no thought of taking courses for credit.

d. *Defining the methods to be used* in attempting to translate the concept into a form that will reach the target audience is a central element in planning. For both *Sesame Street* and *Telekolleg*, this effort consumed a major share of planning resources in the form of defining curriculum objectives and methods. Both programs relied heavily in the planning stage on expert advisory groups working closely with TV production staff and in-house research staff. For *The Advocates* this stage consisted essentially of defining program format.

e. *Obtaining appropriate air time* in light of target audience viewing habits was an important concern for all four programs reviewed here. *Telekolleg* needed to be on the air in the evening after work, *Sesame Street* in the morning when older brothers and sisters couldn't pre-empt viewing rights, and *The Advocates* in prime evening time to reach a large adult audience. Programs with instructional content attempt to rebroadcast programs each week so that people who have

missed lessons, or who need extra work, can tune in for a second chance. *Sesame Street* and *Telekolleg* were successful in planning for rebroadcast. *Chicago TV College*, limited to use of one station's facilities, was able to achieve that goal only in part.

In the United States, educational programs face a choice between distribution on commercial or educational channels. For programs that require rebroadcast and a large number of viewing hours weekly, educational television presents the prospect of more time availability. Balanced against this consideration is the restricted audience for educational TV, particularly on UHF stations. In order to appeal to a wide audience on these channels, the producing organization must mount a substantial promotional campaign. For example, in order to overcome the anonymity of educational TV, Childrens Television Workshop has spent from $600,000 to $1,000,000 annually since 1969 to promote audience development.

f. The problem just discussed is one aspect of the *marketing plan*. The major elements of this plan are analysis of target audience characteristics, including their viewing, reading, and radio listening habits, followed by planning for a marketing campaign, which includes some or all of the following elements: (1) direct advertising by television, press, and radio; (2) obtaining cooperation of community leaders, local, state, or federal agencies; (3) a public media relations effort; (4) direct mail approaches; (5) special grass-roots campaigns to promote non-broadcast materials. *Sesame Street* and *Telekolleg* used all of these methods, while *TV College* focussed mostly on direct mail and television commercials on the educational channel.

2. Development

Development essentially consists of translating the planning concepts and approaches into television programs. This means: turning curriculum content specifications or program format designs into written and filmed materials; final choice of distribution channels; setting up evaluation and feedback mechanisms; arranging for development of non-broadcast materials; and preparing detailed marketing arrangements.

a. *Translating curriculum specifications into written and filmed materials* may be a very elaborate and pathbreaking process, as in *Sesame Street* or, to a lesser extent, *Telekolleg*. In other cases (*The Advocates*) the comparable activity is development of a program format and approach that will be most effective in meeting program goals. For *Sesame Street* this process took nearly a year, while for *TV College*, which could base its work on existing course materials, less than two months were needed initially.

If there is to be substantial use of animation or special filmed materials under contract, their production lead times will be long. Animation houses are often booked well in advance and the work requires a good deal of labor time. If the format is to be relatively simple technically, then this aspect of development can be relatively short.

Another consideration is general program format. For example, a talk show, a panel program or a lecture series will require relatively little development time. If there is a good deal of script-writing or other creative work required, then much longer development periods are required. Thus, *The Advocates* was on the air within six months, while *Sesame Street* and *Telekolleg* took nearly two years.

b. *Choice of distribution channels* was discussed above under planning. In the development phase, a final choice is made. This will have important consequences for audience size and composition, and the nature and extent of the marketing effort.

c. *Evaluation and feedback mechanisms* can vary widely in nature and extent of effort. In some programs (*TV College, The Advocates*) there is heavy reliance on direct audience reaction, whether by mail or through student-faculty interaction. In others (*Sesame Street, Telekolleg*), there were detailed (and expensive) arrangements for formative and summative evaluation.

Elaborative evaluation mechanisms are appropriate when a program is breaking new ground in terms of target audience, objectives, or methods, particularly if the program is considered to be of substantial importance to public policy and/or very costly to develop and operate. Simpler methods are appropriate when the producers can call on a body of existing knowledge about a given type of program or when methods or objectives are perceived to present no major conceptual problems or to be of relatively lesser importance for public policy.

When detailed evaluation and feedback systems are considered desirable, it is often appropriate to develop a number of pilot shows for testing with representative audiences and expert groups. Their reactions can be used to adapt program production before programs go on the air. In the *Sesame Street* case, the reaction of pilot audiences in a "real life" viewing situation, complete with outside distractions, played an important part in shaping final production decisions.

d. *Development of non-broadcast materials* is always an important element of degree-granting and skill-training programs. In *Telekolleg*,

for example, more than twice as much money was devoted to collateral materials than to television production. In these programs, television production is carefully designed to be part of a multi-media approach to instruction.

Non-broadcast materials are also used in other programs (*Sesame Street*), but they often play an ancillary role, in that television production is not usually designed to take non-broadcast elements into account.

e. *A carefully prepared marketing strategy* is, as noted above, particularly important for assuring a wide audience on educational television. This consideration is reinforced when the audience is not "captive"--that is, not aiming for a degree or for specific skill training objectives.

The timing of the marketing strategy and the coordination of different media are particularly important. The public relations effort must peak at about the time the program goes on the air. But this implies a need for a maximum effort over a short period of time, which in turn creates difficulties, because of the need to recruit competent public relations staffs for short time periods. Children's Television Workshop handled this issue by in effect contracting its public relations work out to a professional public relations firm, which could offer a number of different media specialists.

3. Operations

The main operational tasks are program production, broadcasting, distribution of collateral materials, servicing program audience (provision of group meetings, test correction, feedback arrangements), and marketing operations. These are natural results of the planning

and development phases, and normally account for the lion's share of program budgets and of producers' efforts. However, in this general model of program development, it is sufficient to describe the operational phase largely as the culmination of successful (or unsuccessful) planning and development phases.

An important part of operations, which must be adequately planned for in advance, is an on-going evaluation program. This function provides the administrators of the overall program, and the producers of the media materials, with constant knowledge of the effectiveness of the program in meeting its objectives. Both *Telekolleg* and *Sesame Street* devote substantial resources to the evaluation of audience characteristics, learning achievement and the like. All the programs studied used pre-recorded tapes of films for actual broadcasts, none attempted to broadcast programs live. However, during the first year at least, the number of programs prepared in advance was kept as low as possible so that productions could respond quickly to this feedback information.

4. Evaluation

Evaluation consists of three elements: (1) *formative evaluation*, aimed at improving the program effectiveness during the development and operational phases; (2) *program monitoring*, making sure that programs are proceeding on budget and schedule, and assuring liaison with sponsoring agencies; (3) *summative evaluation*, measuring the effectiveness of programs after the fact in terms of impact on target audience and other viewers.

All programming requires at least some use of each of these three elements, even if the functions are not formally recognized as such.

a. *Program monitoring* needs little discussion. It is a standard management task. The sponsor liaison function is particularly important, because television deadlines are insistent, high-quality production is essential, and management must work out agreement with sponsors on basic policies without allowing sponsor relations issues to disturb the essential daily flow of work.

b. *Formative evaluation* was discussed above, under the planning and development headings. It may range from the elaborate pre-testing systems of *Sesame Street*, utilizing a large in-house research staff plus consultants and contract research, to the executive producer's conferences and review for *The Advocates*. To be effective it must be based on careful study of audience or expert response and more important, carried out in such a way that it is convincing to management.

c. *Summative evaluation* can cover an equally wide range of effort. However, whether it takes the form of mail response to questionnaires or detailed studies of viewer's cognitive or affective change, it too, can only be effective if it is carried out using staff or methods that can gain management confidence. All too often summative evaluations are presented in ways that management considers too complicated or irrelevant.

In order to avoid such outcomes, Children's Television Workshop and The Bayerische Rundfunk developed close working relations with the outside evaluators who conducted summative evaluations so that each party could understand the other's approach. This method can lead to

charges that evaluators' and producers' relations are too close for objectivity. However, although this danger may exist, it is probably less serious, given good judgement on both sides, than the danger that the summative evaluation, while objective, remains disregarded by the producers.

A good summative evaluation should investigate not only how people's knowledge or behavior has changed as a result of the program, but also less palpable issues: what do people think about the program, what are the characteristics of viewers and non-viewers, how successful have marketing and non-broadcast efforts been in their respective domains. More broadly, the program may have had unanticipated effects on community attitudes (for example, if kindergartens show *Sesame Street*, do parents feel more favorably toward the schools? If rural students gain the high-school certificate through *Telekolleg* do they tend to emmigrate more readily to the cities? Do women with children who receive the *TV College* degree tend to take jobs outside the home?) or on attitudes toward public issues (How, if at all, has *The Advocates* affected people's attitudes toward the Calley trial or the FBI?).

B. APPLICABILITY OF THE GENERAL MODEL TO CAREER EDUCATION PROGRAMS

In view of the decision to focus the initial Model III effort (home/community based career education model) on a television program aimed at women in the home, with production contract award by January 1972 and program on the air by the fall of 1972, the general model offers several potentially useful guidelines.

1. The program will have to be produced by an existing organization if the time schedule is to be met.
2. The target audience will either have to be specified in some detail or else the programming will have to depend heavily on an entertainment approach in order to attract a broad spectrum of women viewers.
3. A daily show, unless it is less than 30 minutes, will probably be unable to command satisfactory air time on commercial television. If it is aired on educational TV, a major promotional effort will be needed to attract a large audience. A weekly show might find commercial time, in view of the new FCC local programming requirements.
4. Given the time schedule, the Office of Education cannot afford the luxury of close collaboration with the producers as to aims and methods. The producer will have to do the job as he thinks best under rather general guidelines.
5. This again suggests the importance of selecting a highly competent organization to do the job, one which is well versed in both TV production and educational programming.
6. The time schedule also virtually imposes a simple format (e.g., a talk show, a variety format -- talk, music and news -- or a panel approach). Sophisticated magazine formats of the *Sesame Street - Electric Company* variety cannot be developed in nine or ten months, nor in that time can the program objectives be successfully embedded in a comedy or dramatic format to compete with afternoon soap operas or game shows.

7. All the successful programs that have specific instructional or attitudinal objectives spent substantial time and effort translating those goals into effective TV programming. Unless goals and methods are specified, the program may simply meander without focus until an audience that may be obtained at first through an expensive promotion campaign eventually loses interest.

II. SUMMARY CASE STUDIES

This chapter describes the development of four television-based educational programs. The aim is to show the variety of aims, methods, and organizational structures that are compatible with effective TV-based presentations.

Each of the four programs -- *Sesame Street*, *Chicago TV College*, *Telekolleg*, and *The Advocates* -- is aimed at a different audience, with different ends in view. Although there are a number of common elements, as discussed in Chapter I, the differences are equally noteworthy. This chapter, in describing the development of each program, points out those differences, emphasizing the key elements that led to program success, and the special conditions that may influence the degree to which that success could be duplicated.

Case Study #1: *Sesame Street*

A. KEY FINDINGS

The following components of the CTW model were essential to the success of *Sesame Street* as an educational television program:

1. A substantial effort, preceding the formal planning period, devoted to identifying and recruiting talented people with the range of skills that would be required to make this kind of show work, and to forming the nucleus of this staff.
2. A heavy, well-funded pre-production research and development effort, extending over a period of 18 months, aimed at establishing instructional goals, understanding the determinants of program appeal for the target audience, and evaluating show content and format for educational effectiveness.
3. Establishing a close working relationship between research and production staffs, and reinforcing informal working relationships with structured devices for insuring continued mutual understanding and cooperation.
4. Devoting heavy resources to public relations, audience promotion, and a grass-roots campaign to insure audience utilization of the show and of non-broadcast collateral materials.
5. Substantial ongoing work in research and evaluation, leading to continuous modification and refinement of broadcast and non-broadcast material.

6. Securing the agreement of local stations to broadcast the show at times best suited to the viewing habits of the target audience.
7. Continuing use of advisory panels of educators, psychologists, and other experts to help with the formulation of program objectives, and to review the progress of the development effort.

B. THE CTW MODEL

The CTW developmental model can be characterized as a series of largely distinct but partially overlapping activity phases, leading over a period of two years to the establishment of a successful operational model for the production and broadcast of educational television shows for pre-school children.* The CTW developmental activity phases can be summarized as follows:

1. Pre-planning Phase
   a. An extensive survey was conducted in 1967 in order to collect the opinions of leading psychologists, educators, and specialists in the field of children's entertainment, regarding the potential uses of television as an educational stimulus for young children.
   b. A target audience -- pre-school children -- was specified, together with the general aim of the proposed television series: To foster intellectual and cultural development in pre-schoolers.

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*This developmental model has been closely followed in the CTW creation, again over a two-year period, of a new show designed to help teach reading to seven-to-ten-year-old children who are experiencing reading difficulties. This show is scheduled for broadcast in the fall of 1971.

c. Talented and potentially interested and available staff were identified early in 1968: television production (producers, directors, writers, etc.); research and evaluation; promotion and utilization; administration and operations. Potential membership of a board of expert advisors was identified.

d. An organizational format (CTW) was specified, and a tentative developmental and operational model was suggested.

e. The nucleus of the CTW staff was brought together early in 1968, and put to work shaping the actual organizational format, building the developmental model for CTW activities, and bringing additional staff into the organization.

2. Research and Development Phase

a. Instructional goals were defined.

- o The nucleus of the CTW staff met a number of times with a wide range of experts during the summer of 1968, to discuss various aspects of child education and formulate initial curriculum goals.
- o Recommendations were obtained from the CTW Board of Advisors.
- o Basic educational objectives were decided on by CTW management, and translated by the research staff into behavioral and operational terms during the fall of 1968.

b. Curriculum goals were organized in three categories -- symbolic representation, problem-solving and reasoning, and familiarity with the physical and social environments --

and were clarified for writers and producers through creation of a *Writer's Workbook*, in which each curriculum objective is discussed at length, strategies for achieving the objective are offered, and a variety of instances of the objective are discussed. The *Workbook* has become an essential structure linking the ideas and creativity of the research and production staffs.

c. Research and production staff operating relationships were developed. On the basis of research staff findings and recommendations, production staff decided how much time to allot to each curriculum goal during each show, and writers produced scripts designed around these goals. The completed scripts were reviewed by research staff for educational soundness; the first 30 scripts were also reviewed by the CTW Advisory Board.

d. The research staff reviewed existing data and performed original research in order to determine the competence in various curriculum areas of the target audience, as a guide to production planning.

e. Research was conducted late in 1968 on the viewing habits and program material preferences of the target audience, in order to gain a better understanding of the kinds of subjects and formats which captured and retained the attention of pre-school age children.

f. On the basis of the stated curriculum goals, long lead-time items, such as animation and film segments, were contracted

for in late 1968 and early 1969. These items were later to be used as a "library" of material from which the production staff, with the help of the research staff, would build the skeleton of each show, with the balance of the material and connecting story themes supplied by the writers.

g. Individual segments of the show were produced in the spring of 1969, and tested by the research staff with target audience samples, in order to determine the probable educational effectiveness (comprehension and achievement) of program content and format.

h. In order to secure optimum time slots for program broadcast (for pre-schoolers, nine to eleven a.m. daily), the administrative staff visited a great many local stations and school districts.

i. Five pilot shows were produced, and tested in two cities by the research staff during the summer of 1969 for educational effectiveness and program appeal. Recommendations for program refinements, based on the results of this study, were transmitted to the production staff, and research staff testing techniques were also refined as a result of this work.

j. The design of the summative evaluation was completed, and refined as a result of information obtained in the tests of the five pilot shows. Pre-testing of the summative evaluation sample population was accomplished.

k. An extensive audience promotion and local program utilization campaign was planned, utilizing the service of a major

public relations firm. The first stages of this campaign were initiated during this phase, in order to build audience attention before the broadcast of the first show.

3. Production Phase

   a. Videotaping of hour-long shows began in late summer 1969, at the rate of five to eight shows a week, with taping running three to four weeks ahead of scheduled air dates.

   b. The show was broadcast originally on the 180 educational television stations in operation in late 1969 across the country. One hundred thirty shows were produced and broadcast over a period of eight months, with selected programs rebroadcast over the summer of 1970. The show is now seen on 202 public television stations and 65 commercial television stations (in areas without public television), which cover approximately 75 percent of U.S. households.

   c. Following production and broadcast of the first shows, collateral non-broadcast materials were produced (Parent Teacher Guide to *Sesame Street*, *Sesame Street Magazine*), and distributed through local television stations, schools, and through the efforts of CTW field services staff. Additional non-broadcast materials were eventually developed (books, records, games, toys), largely through manufacturer proposals tested and screened by the CTW research staff and Advisory Board, and marketed through normal commercial channels.

   d. Audience promotion and utilization activities were substantially increased through three approaches:

- A national public relations campaign aimed primarily at mothers and teachers, which was launched in the months preceding the first airing of *Sesame Street*, was intensified. Local stations were funded by CTW to mount promotional campaigns in their cities; specially prepared materials were mailed to each of the different media; nationally telecast simultaneous press conferences, using excerpts from the show, were mounted; and a special monthly newsletter was created which is mailed to 5,000 opinion leaders around the country.*
- A utilization program was launched in order to reinforce the instructional goals of the program. The *Sesame Street Magazine* and available materials produced elsewhere for the same general educational purposes are used by a CTW field services staff, and by teachers and community volunteers, in local day care, nursery and kindergarten programs, as part of parent education programs, in teen-age vocational training, in special education for retarded or handicapped children, as training for teachers and para-professionals, and in other developmental or educational programs, especially for young children.

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*The promotion campaign for the new CTW Reading Show ("The Electric Company") will again utilize these techniques. A preview of the show will be arranged on commercial time (as with *Sesame Street*); a newsletter and guide to the show will be available for teachers on a subscription basis, and a paperback book explaining the show and the curriculum will be mailed to every second, third, and fourth grade teacher in the country.

- o The CTW field services staff is located in 14 major cities, where it has created broad-based community advisory councils and special viewing centers where utilization programs can be effected. This staff is trained to know where community people gather, how to reach them, and how to gain community endoresement and support for the program's goals. Grass-roots feedback to the field services staff is channeled back to the CTW research and production staff, and contributes to continuous modification and refinement of show material.

4. Evaluation Phase

   a. Formative evaluation of regularly scheduled broadcast shows was begun in the early stages of the production phase. The CTW research staff, using tests developed by Educational Testing Service for use in their summative evaluation study, tested selected pre-school children in eight major instructional goal areas at three-, six-, and twelve-week intervals from the premiere showing of the program. Test results were interpreted to the production staff before more than half the season's shows had been produced, and modifications and refinements were made to remaining shows in appropriate areas.

   b. Independent (ETS) summative evaluations were conducted at the end of each of the first two broadcast seasons, and will continue to be made. The research design and strategies for the summative evaluations were developed by ETS, CTW

research staff, and the CTW Research Advisory Committee. A comprehensive evaluation of the show's effects was carried out for each instructional goal area, for various target audience categories. The tests were tied closely to objectives and to curriculum, and did not attempt to examine general transfer effects (e.g., I.Q.).

c. Summative evaluation results were used by research and production staffs, together with information gained from formative research, in the process of their continuing modification and refinement of instructional goals, curriculum content and presentation, and *Sesame Street* material -- a process that is now built into the CTW operating model.

5. Developmental Budget

The Workshop budget from start-up in the spring of 1968 to the completion of one full season of broadcasting in June, 1970, was $7.2 million. That budget was expended approximately as follows:

a. March 1968 - August 1968: $300,000.

Production staff -- $200,000.

Research staff -- $100,000.

b. September 1968 - November 1969: $1.6 million.

Production staff -- $350,000.

Research staff -- $450,000.

Pilot shows -- $250,000.

Other research -- $200,000.

Administration and management -- $300,000.

c. November 1969 - June 1970: $5.3 million.

Production staff -- $3,500,000.

Research staff -- $300,000 (includes ETS summative evaluation work).

Promotion -- $600,000.

Utilization in cities -- $400,000.

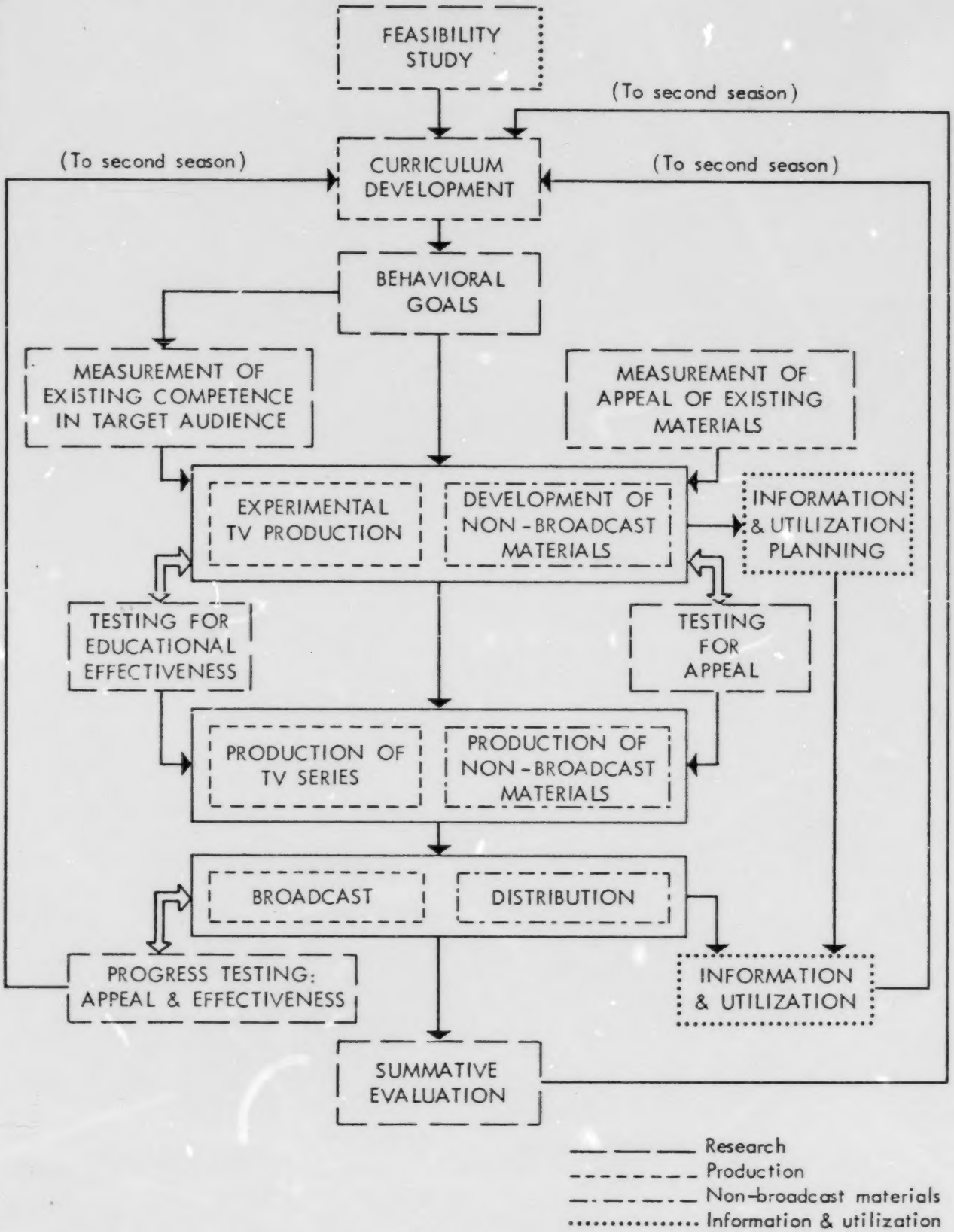
Other promotion -- $200,000.

Management and administration -- $400,000.

Program distribution -- $500,000.

The budget for CTW's second year closely approximated the totals and breakdown summarized above. There were some shifts in internal priorities (field services and development of non-broadcast materials were heavily funded; research expenditures dropped slightly), increases in some areas reflected rising costs, and substantial resources were devoted to development of the new Reading Show.

Fig. 1



The CTW Operational Model

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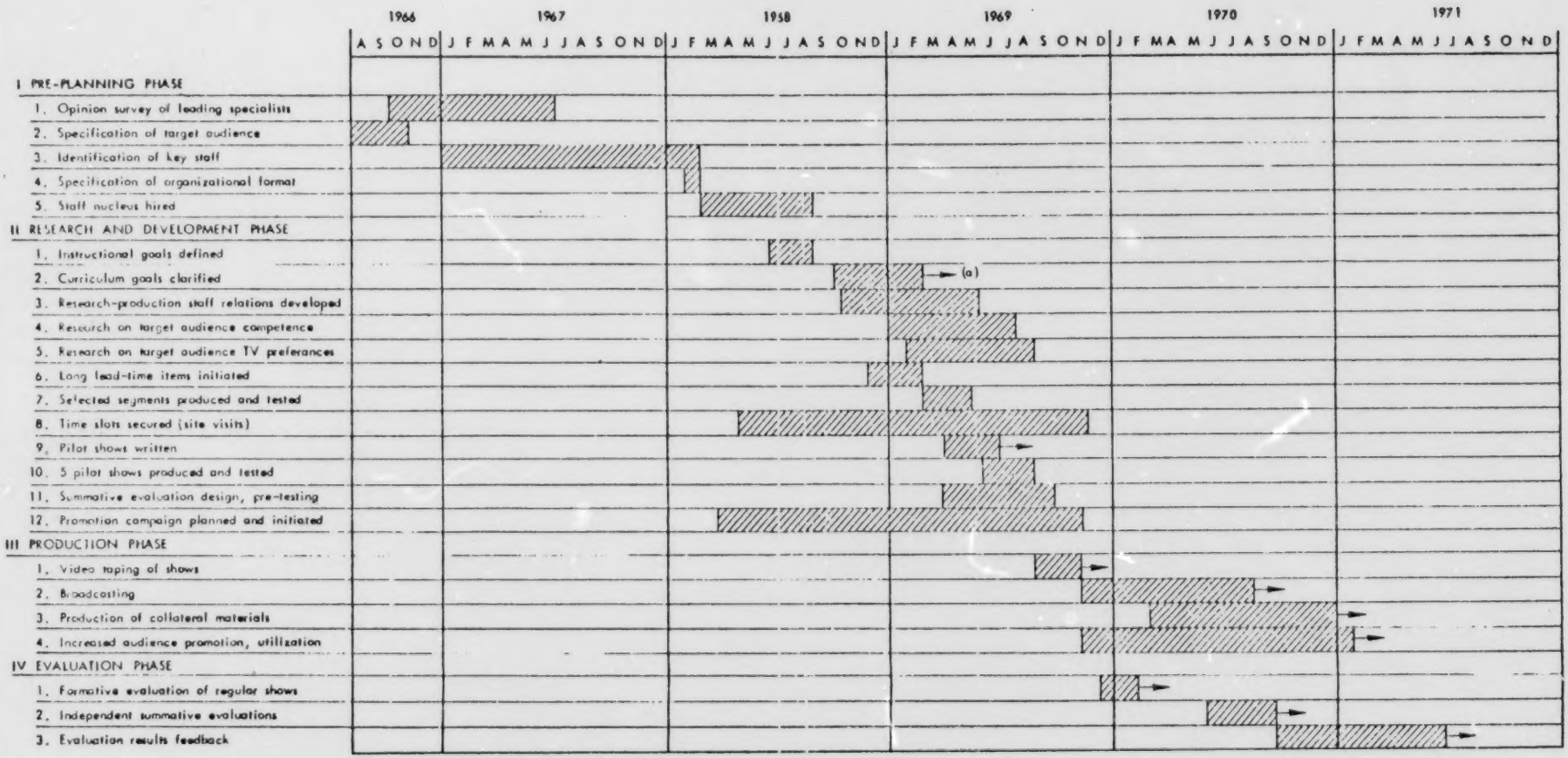
Fig. 2


1966
1967
1968
1969
1970
1971
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F MA M J J A S O N D J F M A M J J A S O N D
I PRE-PLANNING PHASE
1. Opinion survey of leading specialists
2. Specification of target audience
3. Identification of key staff
4. Specification of organizational format
5. Staff nucleus hired
II RESEARCH AND DEVELOPMENT PHASE
1. Instructional goals defined
2. Curriculum goals clarified
3. Research-production staff relations developed
4. Research on target audience competence
5. Research on target audience TV preferances
6. Long lead-time items initiated
7. Selected segments produced and tested
8. Time slots secured (site visits)
9. Pilot shows written
10. 5 pilot shows produced and tested
11. Summative evaluation design, pre-testing
12. Promotion campaign planned and initiated
III PRODUCTION PHASE
1. Video taping of shows
2. Broadcasting
3. Production of collateral materials
4. Increased audience promotion, utilization
IV EVALUATION PHASE
1. Formative evaluation of regular shows
2. Independent summative evaluations
3. Evaluation results feedback
(a)

(a) ⟶ Indicates continuing or repeated activity

Fig. — "Sesame Street" developmental and operational activities, 1966 - 71 (approximate durations)

We have listed under the heading, Key Findings (above), those components of the CTW developmental model that were, in our opinion, essential to the success of *Sesame Street* as an educational television program. We would list in addition several critical management decisions -- some taken quite early -- that had a special bearing on the show's success:

1. That program appeal and educational effectiveness were inseparable; that the desired linkage was between the highest quality commercial television production techniques and the best that professional academic research had to offer.
2. That the program would utilize a "magazine" format, which kept the pace moving fast, made it possible to pre-test program material on a segment-by-segment basis, and allowed the production staff to maintain a highly flexible position with respect to modifications, refinements, or scheduling of repeat segments for purposes of educational reinforcement.
3. That the production staff was to be steeped in professional educational and curriculum problems from the outset, rather than being "handed" a set of curriculum goals and told to produce a show.
4. That a strong black image for the show would be deliberately sought, and reinforced from time to time with guest appearances of black celebrities, because the show was aimed principally at the urban disadvantaged pre-schooler.

The CTW staff now numbers nearly 200 people, grouped by function into several departments: Administration, Production, Research, Field Services and Community Relations, Special Projects and Foreign Programming,

Technical Operations, Non-Broadcast Materials and Legal, and Business and Office Services. A National Advisory Board, a Research Advisory Committee, and a substantial list of consultants continue to serve the Workshop.

C. OF SPECIAL NOTE

1. The CTW developmental model was highly successful for at least two reasons that often tend to be overlooked, in part because they are too obvious:

- o The Workshop began operations with a very clear idea of what the target audience was to be, and quickly agreed on clear and discrete educational goals.
- o The CTW staff enjoyed the benefits of strong personal leadership, relative insulation from continuity problems, and relative freedom from initial production and broadcast deadlines that might have been unrelated to the level of preparation the staff felt was required.

2. The extensive CTW formative research effort can be partially explained by the fact that there was a very special target audience for *Sesame Street*, about whom there was insufficient information, and who were difficult to test without very careful procedures. However, there is no reason to believe that the selection of a different target audience, different educational goals, or a different program format would necessarily reduce the requirement for an extensive pre-production research and development period.

3. The CTW staff and organization was built from the ground up. Given the special problem that had to be solved, this was an effective

approach, since no existing organization had sufficient experience with the kind of show evisioned by CTW's creators. Whether this approach would also be effective for another new show with special goals would depend largely on the goals and approaches chosen. In some cases, particularly where tight deadlines must be met, CTW management is of the opinion that only existing organizations could be utilized. In a longer time frame, comparable to that faced by CTW, a new special-purpose organization may be preferable in some cases.

4. Although it is undoubtedly true that the size of the viewing audience for educational television has been increased by the success and promotional activities of *Sesame Street*, we agree with the CTW staff that a new show on ETV could not afford to assume the presence of any "built-in" audience, and would have to mount an extensive promotion campaign of its own, especially because it can probably look forward to stiff competition from established daytime television programs.

5. CTW has given more thought, (and has more experience) than any other American educational television production company, to the question of specialized television techniques designed to educate and entertain at the same time. A close study of CTW's operations and thinking is therefore probably useful for anyone setting out to succeed in a similar venture, depending on goals and anticipated format of the new show.

Case Study #2: *Chicago TV College*

A. KEY FINDINGS

The following components of the *TV College* model are essential to its continuing success:

1. It is built upon the facilities, resources, experience and educational program of a large, 50-year old community college system.
2. It fills an educational need for an audience that is highly motivated but has inadequate opportunity to acquire higher education in other ways (e.g., women with young children).
3. Shows are continuously refined in quality and adapted in content to audience needs, as the result of an ongoing research and evaluation program.
4. It is widely promoted throughout its broadcast catchment area, by a variety of means.
5. Every program is carefully and extensively prepared and rehearsed, with very close coordination between college faculty and the television production staff.
6. There is extensive and varied two-way communication between TV faculty and registered students viewing at home.
7. Great care is taken to avoid redundancy in course offerings; a three-to four-semester cycle between course rebroadcasts has been established. In this way a student can obtain an Associate of Arts degree in two and a half years.

B. THE *TV COLLEGE* MODEL

TV College was begun in 1956 as a three-year experiment to determine whether college level courses could be taught successfully over television. With funding from The Ford Foundation and the Chicago Board of Education, a small production staff and selected faculty members from Chicago's community colleges broadcast the first TV courses in the fall of 1956. Careful attention was paid to faculty recruitment and screening, student-faculty communications, city-wide promotion of the show, and coordination of the TV courses with related courses offered on the campuses. Faculty chosen for TV teaching were relieved of campus teaching duties and provided with adequate time, at full pay, for the preparation of very careful course presentations.

A systematic evaluation of student achievement was conducted, in which the academic success of home television students was compared to that of on-campus students enrolled in the same courses, and later to the record of students receiving television instruction in campus classrooms. On the whole, television proved to be as good as, and often better than, classroom instruction, for the more mature, highly-motivated students attracted to home television courses. The performance of students viewing television in the classroom tended to be inferior to that of home viewers and to the performance of students receiving conventional classroom instruction; with some refinements in the television presentations and the addition of some face-to-face classroom instruction as backup, their performance improved.

The success demonstrated by *TV College* in this three-year period led to a commitment from the Chicago Board of Education to continuing

support of the television effort. With refinements to the model introduced as a result of the first three year's experience, TV college continued to broadcast and to extend the variety and sophistication of its course offerings. Operations in the years 1960-1971 have conformed closely to the model summarized below.

1. Organization and Administration

TV College is an integral part of the Chicago City Junior College system which is comprised of eight campuses. A Dean of Television Instruction is responsible for planning, policy formulation, and overall direction of the program. Students register initially for television courses at one of the eight campus branches of the system, where they are treated administratively as students of the branch, rather than of *TV College* itself. Admission requirements, placement tests, course prerequisites, and all other requirements except classroom attendance are the same for all students, television or on-campus.

In cases where the course is presented live, in addition to the faculty member giving the course, alternate teachers are selected who serve both as stand-bys in case of emergency, and as assistants and critics to help the TV teachers sharpen their presentations. Section teachers at each of the campus branches are appointed as well, with each in charge of a group of TV-at-home students, whom he confers with over the telephone and in person, and whose work he grades.

Where research and evaluation are being conducted, control class teachers are also selected where required; they work closely with the research and evaluation staff of *TV College*. *TV College* course offerings are carefully coordinated with course offerings at the branch

campuses, and concurrent (branch campus and *TV College*) enrollment is encouraged.

2. Faculty Recruitment and Preparation

Tenured faculty from the Chicago Junior College system are used almost exclusively on *TV College*. Volunteers are first screened for scholarly excellence and classroom competence; final screening is made by the production staff on the basis of a teacher's television presence and appearance. Once a faculty member is selected, he is trained by the television production staff for TV presentation of his course, and is given extensive opportunity for practice and rehearsal. A teacher must present explicit and concrete course objectives, translated into operational terms. He spends eight weeks outlining the topics to be covered on the telecasts, selecting published materials and audio-visual aids, planning assignments, conferences, examinations and telephone conference hours,preparing research designs where required (if the course is part of a controlled experiment), and making related preparations for taping his TV presentations. After he tapes these presentations, he prepares an extensive teleclass study guide, which is mailed to enrolled students.

The guide provides the student with an orientation to the TV method of course presentation, a course outline and statement of objectives, lists of collateral and required readings, sample test items, a list of assignments and due dates and related material which serves to integrate the TV instruction and reading materials into a unified learning experience. Each course is presented in two 45-minute sessions a week for 16 weeks.

It is shown twice a day. If a course is rebroadcast after the passage of some time, the teacher is relieved of a portion of his regular teaching load in order to review, edit, and bring the course up to date.

3. Student-Faculty Communication

Communication between faculty and students is an essential part of the educational program of TV College, and is accomplished by various means:

- Grading and commentary on homework and exams, by mail. An instructor can grade and return homework to students before the next TV lesson. Students take an average of three exams per course -- one every ten weeks.
- Telephone communication with the TV instructor or section teacher. The instructor schedules telephone hours immediately after telecasts so that he may answer questions credit students may have pertaining to the lesson.
- Conferences with section teachers.
- For some science courses, lab sessions at a branch campus every few weeks, and for courses in a foreign language, eight bi-weekly meetings for conversational practice.

4. Promotion

TV College is publicized widely throughout the Chicago metropolitan area; it is available to more than seven million people living within broadcast range of Chicago's educational television station, WTTW. An information folder describing the program is sent to a mailing list, built up over the years, of over 35,000 people, with 15,000 more going

to libraries, schools, government offices and the like. WTTW runs *TV College* "previews" and "spot commercials," and the show is featured in newspaper and radio news and feature stories, as well as conventional newspaper TV listings.

5. Research and Evaluation

Initial heavy investments in evaluations of the educational effectiveness of *TV College* established the fact that at-home television students were apt to do as well or better than their classroom contemporaries in any given course. Further research and evaluation has defined *TV College* audience characteristics more closely. Students who are enrolled for credit tend to be intelligent, highly motivated, and ambitious. They are serious and career conscious; their average age is 29 years, and their average IQ is 110-120. Almost half of these students are preparing for teaching careers; fully 75 percent are women.

Students who enroll without seeking credit are generally more sophisticated and more educated than the credit enrollees; as of fall, 1970, a total of 98,598 students had enrolled for credit since 1956 as opposed to non-credit enrollees of 88,520. While yearly credit and non-credit enrollments are relatively small compared to the size of the viewing audience, other data indicate that there are about 250,000 regular viewers each semester, and perhaps 500,000 frequent, but not daily, viewers of each semester's courses.

A continuing research and evaluation program gathers data about the size and composition of the viewing audience (enrolled and not enrolled), investigates which aspects of the programs are most attractive to the enrolled audience, and compares the educational effectiveness of

TV courses with that of similar courses taught by conventional methods, by classroom television, or by combinations of other means. Information derived from these studies is used in the planning of new course offerings and the modification of presentation techniques. Both internal and external evaluations have been used. A study just completed but not yet available was done by an external evaluator to help *TV College* assess new directions it should take for continued future success.

6. Budget

The three-year experiment conducted from 1956-1959 to determine the feasibility and effectiveness of TV teaching was funded by a $475,000 grant from The Ford Foundation and $600,000 from the Chicago Board of Education; this averages about $350,000 a year. (We have no detailed breakdown of these figures for the three-year period.)

Today's operating budget is about $940,000 annually, divided almost equally among three categories: (1) station operations, (2) teacher salaries, (3) all other operations including *TV College* staff, overhead, and equipment purchases. *TV College* is funded entirely by the Chicago Board of Education.

C. OF SPECIAL NOTE

1. The audience is highly motivated, career-oriented and intelligent (average IQ about 115). This makes generalizations to wider, less-highly selected audiences dangerous.

2. Taping the TV lecture series is less expensive than live production, but reduces the ability of the instructor to respond to feedback in his next lesson. Whereas in live shows, if many phone calls after the broadcast indicated that a point was misunderstood,

the instructor could remedy this in the next presentation; this is not possible if the lessons are all prerecorded and creates a necessity for even more careful original planning by the instructor of each presentation.

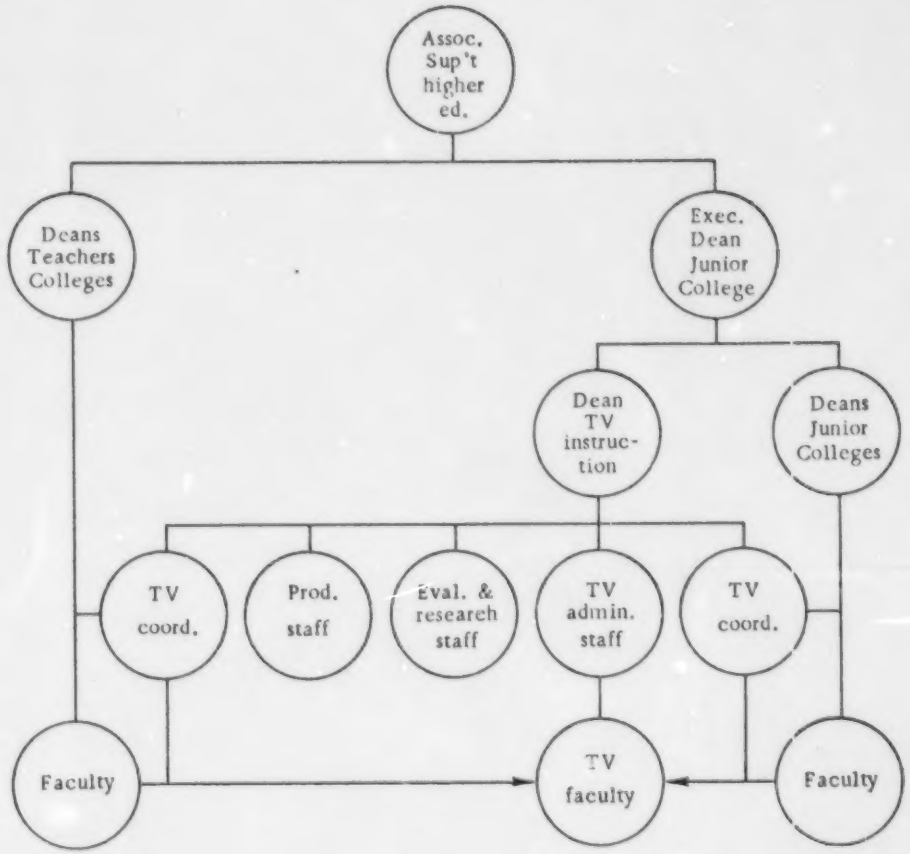
3. One adult education course shot on location at many industrial plants has been presented, showing where jobs of various kinds are available. In the spring of 1969, 112 students took this course for credit; 161 non-credit. This is a relatively low enrollment compared to that of required community college courses. Additional adult education courses are being planned in ecology, consumerism, real estate, office services, and data processing.

4. All courses are available for national distribution through the Great Plains National Instructional Library (non-profit) at the University of Nebraska, Lincoln, Nebraska.

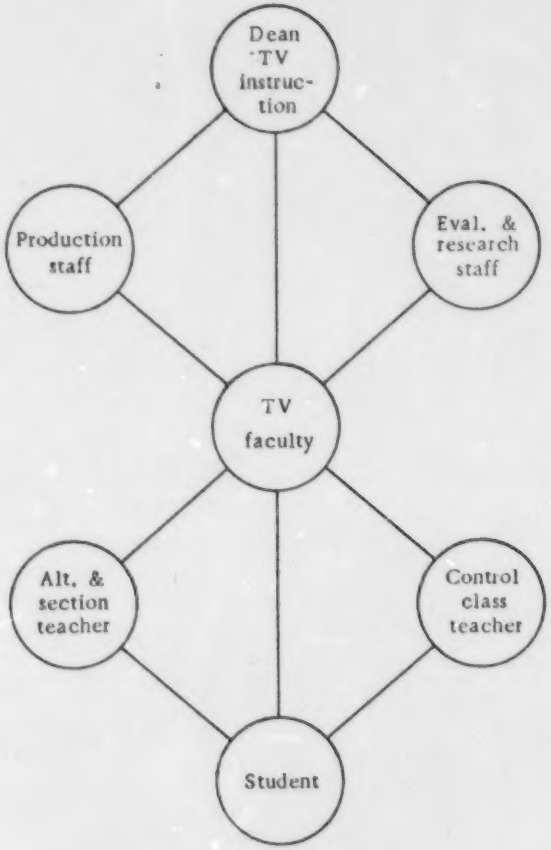
5. No follow-up studies have been made of the program graduates; therefore no statements can be made about the long-term effectiveness of the program.

6. Controversial subjects have not proved to be a source of difficulty when presented as part of a course. This is attributed to the approach: objective, scholarly, and devoid of sensationalism.

Fig. 3



Administrative organizational chart -
Chicago TV College



Instructional relationships chart -
TV College

Case Study #3: *Telekolleg*, Munich

A. KEY FINDINGS

The following characteristics of the *Telekolleg* model are essential to its continuing success:

1. *Telekolleg* is not merely a broadcasting service, or an opportunity for general educational improvement, but an integral part of the state instructional system, leading to a recognized examination which can open doors to employment and further education.
2. It is a multi-media instructional system, consisting of several interrelated components, with emphasis on student response, activities, and occasional group meetings for instructor-student and student-student interaction.
3. It fills an educational need for many people, both young and adult, who for reasons such as full-time employment or remoteness of residental location, cannot attend the existing institutions for career education.
4. It utilizes the talents of progressive educators and teachers, professional writers and imaginative TV producers of the highest calibre available in the community.
5. It works very closely with several research institutes which devote substantial effort to research and evaluation, providing excellent feedback to the planners and producers in such areas as analysis of student population and effectiveness of instructional method.

6. It recognizes the importance of individual study in learning, provides excellent printed materials, workbooks, reference volumes and the like, and devotes over twice as much of its resources to the other components of the system as it does to the television programs and their development.

B. THE *TELEKOLLEG* MODEL

Telekolleg offers an opportunity for a home-based student to study the curriculum of the state vocational school, the Berufsaufbauschule, and to prepare himself for the state administered examination called the Mittlere Reife, approximate equivalent of an American high school diploma.

Telekolleg offers a full course of study, comprising some 14 courses containing 468 lessons in all, each of which includes a half-hour television broadcast. A "full time" student who takes several courses simultaneously can finish in two years; some take three or four. In 1969 more students of *Telekolleg* passed the Mittlere Reife than did examinees from all 82 of the existing Berufsaufbauschule combined.

Although developed specifically for the needs of Bavaria, the *Telekolleg* system is also used in its entirety in four other German states, in part in two more, and also in Austria and German-speaking Switzerland.

Latest data indicate that almost 20,000 students make full use of *Telekolleg* in preparing themselves for the Mitlere Reife, or its equivalent. In addition, some 37,000 people are known to be taking individual courses for general educational development. All 37,000

pay for the printed materials, purchasing them in a book store or ordering from the publisher directly; but most of them are general interest viewers who do not prepare correspondence papers, attend group sessions, or take exams. A fourth category of participant, people who watch the programs but do not purchase the printed material, is estimated at three to six hundred thousand persons. For some courses as many as ten percent of all TV sets in Bavaria are regularly tuned in to *Telekolleg*. Its share of the viewing audience, which considers only those TV sets that are actually turned on, would of course be larger than this. Even in a community where there are only three channels from which to choose, this is a very respectable rating for an educational program.

1. Significant Characteristics

Telekolleg is a multi-media and multi-method system, and hence is at once a more ambitious, more serious, and more effective program than most of its forerunners in home-based educational television systems. It is a multi-*media* system because it makes use not only of television lessons, but also of printed materials which are not time-bound, and can be studied at length, reviewed at will, or ignored if desired. Other recorded media are also sometimes used (phonograph discs are sent out to accompany the English course; the telephone has been used for remote access to a language lab drill-and-practice system).

Telekolleg is a multi-*method* system, not only presenting information in the two media described above, but also stimulating and requiring student response of various types. Printed study materials are generally of the programmed instruction type, where the learner's

response is elicited by questions which are answered correctly on the next page. The correspondence assignments are more in the nature of problems which the learner is to solve without prompting, and offer the greatest challenge. The final component of the *Telekolleg* system, the five-hour group meeting every third Saturday, called the Kollegtag, adds several more instructional methods. In the ideal situation, under a gifted teacher, the Kollegtag can incorporate spirited discussion of the material under study. There is supposed to be time for individual tutoring and guidance, although in a group of 20 learners this would necessarily be quite limited.

Some courses require complex responses. The course in technical drawing, for example, provides exercise sheets with which the learner, using his own set of tools, may follow step-by-step demonstrations as they are presented on television.

Detailed description of the *Telekolleg* curriculum, student activities, the evaluation component and some of its findings, instructional results, costs, and sources of funds, may be found in Appendix I. Of primary interest, however, is the procedure which structured the planning and development phases.

2. The Phases of Planning and Development

Telekolleg took two full years to plan its operations, and at that only 40 percent of the required product was at hand when operations began, so both planning and development continued during the operations phase. These phases are summarized in Fig. 4, and described in the sections that follow.

a. Preplanning Phase

Telekolleg was the first full instructional series that the Bayerische Rundfunk had produced. It had been preceded by a certain amount of supplementary or enrichment programs for use in the school (studienprogramm) and the extent of general home-viewing of these programs had convinced the broadcasters that there was a general need for home-based learning, possibly as a supplement or alternative to in-school learning.

These conclusions then led eventually to the decision to proceed with a home-based version of the conventional Berufsaufbauschule. The extent of this preplanning process, or how many people who took part, is hard to define, since general surveys and studies such as those described below by Alois Schardt are a constant activity of the Bayerische and other German Randfunks. Schardt stated:

> The *Telekolleg* was preceded by a number of general surveys. In these surveys special interest was given to five aspects:
>
> (a) A socio-cultural evaluation of the desire of the population for social advancement, as far as this desire is connected with self-improvement;
>
> (b) a study to determine the extent of lack of professional qualifications at the intermediate level, noted in public services, administration and industry;
>
> (c) a socio-cultural examination of the locations of the main types of schools valid for paragraphs (a) and (b);
>
> (d) an enquiry to determine which types of school, from among those already established, would best meet the needs, arising from paras. (a), (b) and (c) and would be sufficiently receptive to allow new teaching media and methods to be introduced;
>
> (e) an opinion poll to ascertain the study habits of persons taking correspondence courses or participating in the "Zweiter Bildungsweg" (an alternative route of secondary education for people in employment).

Fig. 4

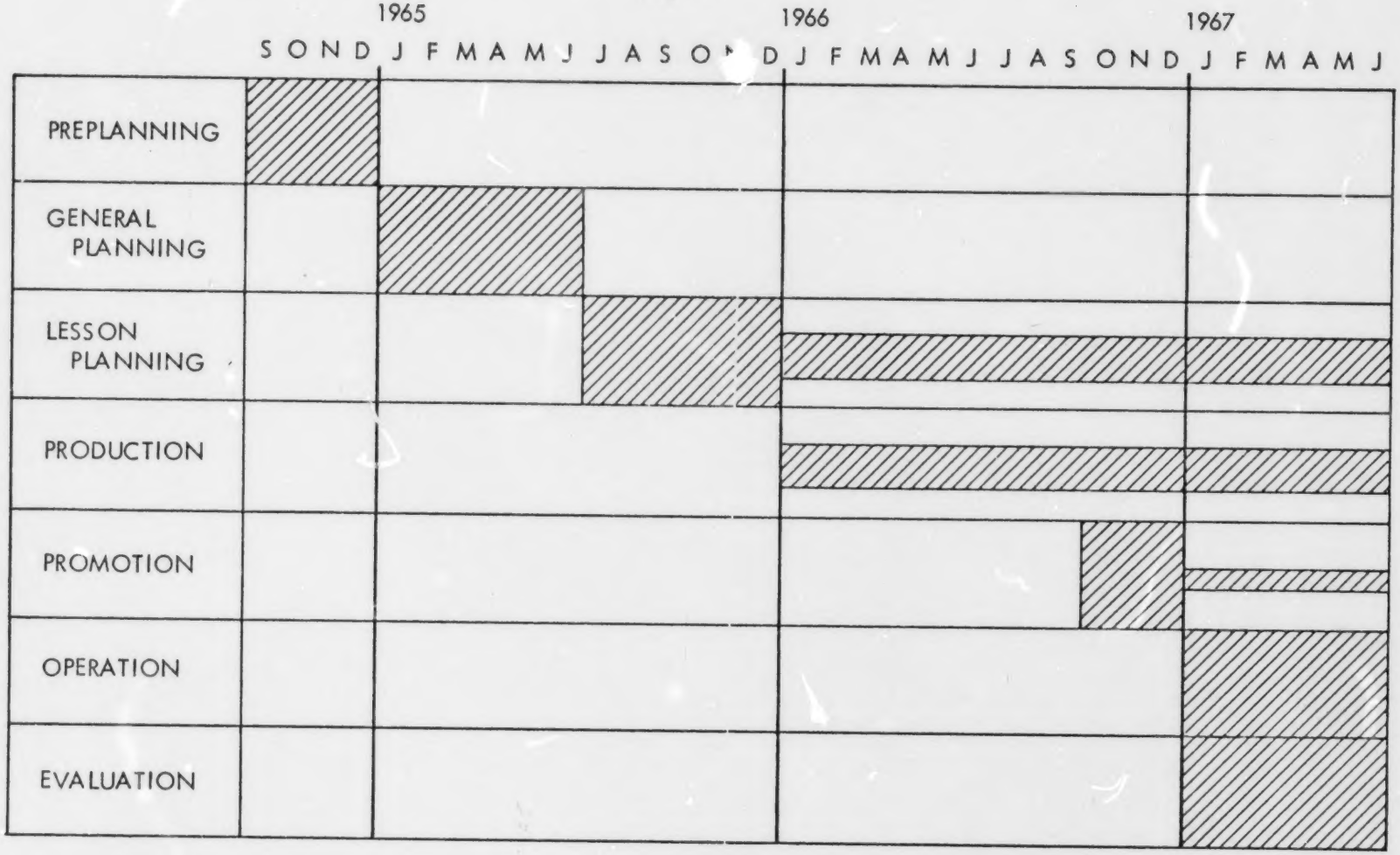

1965
1966
1967
S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
PREPLANNING
GENERAL PLANNING
LESSON PLANNING
PRODUCTION
PROMOTION
OPERATION
EVALUATION

Table 3—Summary of phases of planning and development: Telekolleg I

The general result which emerges from these surveys and studies may be summarized as follows:

(1) In contemporary society, the demand for information is not satisfied with current events and entertainments; it must be offered the type of knowledge which will ultimately permit greater social mobility. It has also been noted that this wish for social mobility is paralleled by a deep desire for personal advancement and enlargement of scope.

(2) in the Federal Republic of Germany, general educational publicity in recent years has explained to the population at large that in a changing society, intellectual mobility is a better guarantee of social status than material wealth or a too specialized professional experience.

(3) The main impact of this publicity has been to persuade parents to send their children to a secondary (grammar) school from the age of ten, in the hope that they will proceed to a university. Nevertheless, both industry and administration are short of personnel with intermediate qualifications, that is, below the level of "Abitur", and rather at "Mittlere Reife" stage.

(4) As only 20% of the population obtain a qualification higher than elementary school level and as there is a growing desire for self-improvement, the school leaving certificates of the "Realschule" or equivalent institutions of the "Zweiter Bildungsweg" are regarded by the general public as a means of attaining social advancement.

b. Planning Phase

Planning for *Telekolleg* began in early 1965. Four persons from the Rundfunk were involved, essentially full time, for six months, concentrating on fund-raising and general planning.

It was realized, of course, that a program leading to a state diploma would have to be done cooperatively with the state. It was also clear that simple broadcasting of programs would not result in the necessary learning, but that other student activities -- some beyond the ability of the broadcaster to provide -- would also be essential.

Accordingly, an advisory council of some 14 persons was appointed to discuss and establish policy for the *Telekolleg* and give all interested institutions a part in the project. This group included representatives

of the trade unions, management associations, teachers' associations, farmers' associations, the Volkswagen Foundation, and universities, among others. In a series of meetings held every few weeks, the target audience was specified, and the general curriculum decided upon. An agreement was formulated between the state and the *Telekolleg*, specifying the responsibilities of each. In brief, the Rundfunk was to provide the TV programs and prepare all the printed materials; the Ministry of Education was to handle the correspondence study and hold the Kollegtage (group meetings).

The planning phase also involved a large number of meetings with officials from the Ministry of Education, professors of education, and the like, in an attempt to determine the best pedagogical approach for each subject that was to be taught. The phase of general planning merged into the phase of lesson planning with the start of the second six months in 1965.

After the first six months the advisory council was kept up to date on developments through the medium of written reports every five or six weeks. They were invited to attend screening of some of the pilot programs and in general given the feeling that they were in partnership in the project, but no further substantial time or effort was required of them.

Lesson planning marked the start of a very much heavier activity. Approximately 120 persons then began full-time activities in writing television scripts and associated printed materials, and in preparing the visual materials that these required. All but 15 or 20 of these people were from outside the Rundfunk. The key Rundfunk people were the five or six "redakteurs" or editors, each with several teams of 8 to 15 people per team under his direction. Each team, composed of subject-

matter specialists, teaching method specialists, the TV editor, writers, and free-lance graphics designers, was responsible for planning the lessons in a single subject.

The planning of lessons proceeded at the rate of some ten per month, until by the beginning of 1966 some sixty lessons had been planned. Lesson planning then dropped to a level of five lessons per month because the production phase of the project had begun and the same 120 persons were then engaged both in lesson planning and in studio production activities. By the end of 1966, just before *Telekolleg* was scheduled to go on the air, there were 130 lessons planned.

The planning process was no great problem for the Bayerische Rundfunk, since the producers essentially followed patterns that had been developed over nearly twenty years of television production experience.

c. Promotion Phase

Starting in October 1966, three months before the start of broadcasting, ten or twelve persons from the Rundfunk staff were assigned to a promotional campaign, to prepare newspaper advertisements and short TV "commercials." In the first phase of a two-stage campaign, 18- to 25-second ads were aired several times daily on TV channels. The Ministry of Education cooperated by announcing the service in all secondary schools in the state. After the program series went on the air the promotional activity dropped to about 5 percent of the maximum level.

The second stage of the publicity campaign began as soon as the respondents were heard from. Some 30,000 persons had responded to the promotional announcements and were sent detailed information and enrollment forms. About half of the original respondents then returned enrollment forms accompanied by a 25DM fee ($6.80). 8500 participants showed up for the first Kollegtag in 136 towns.

d. Production Phase

Production began in early 1966. By January 1967, when the first programs went on the air, 40 percent of the *Telekolleg* lessons (130 programs) were on tape. It was the opinion of Dr. Fuchs, director of *Telekolleg* that 60 percent would have been a more comfortable margin to begin with; scheduling Rundfunk studios for production is sometimes difficult, and it is easy to get behind schedule. In addition to the 130 produced tapes, another 130 lessons were prepared and ready for production, and 130 more were in the planning stage. Broadcasting of the programs began with relatively few tapes completed so that feedback from evaluative research could be incorporated into production as rapidly as possible.

The total elapsed time between the start of planning and completion of production of a *Telekolleg* TV course averages about 6 to 8 months. A period of 4 to 6 months was needed for the planning and production of the printed materials. Scheduling was very tight and stand-in writers were kept ready to step in and continue the planning schedule whenever a first-string writer had to temporarily drop out because of illness or other reasons.

Most of the tapes are produced in black and white; only the science lessons are in color, because there aren't many color sets in Bavaria.

During 1967 production proceeded at a rate of 130 programs every three months (13 per week, or two every working day). Two studios were in constant use; *Telekolleg* was probably the major effort of the TV production center during that period. At the end of August 1967, or soon thereafter, the original 468 lessons were on tape.

At the present time, production continues on remakes of *Telekolleg I* lessons and the new *Telekolleg II* series (see Appendix I). Two producers are involved, each responsible for producing 100 programs per year. Each

producer has 4 to 6 directors working under him; each director does a program every two weeks.

Telekolleg produces a 30-minute lesson in one full studio day. This time includes only 5 to 6 hours of full facilities time; the other 2 or 3 hours consist of setting and striking scenery and lights, and dry rehearsal (without cameras). The ratio of studio time to program time is 16 to 1; the ratio of camera rehearsal to program time is more like 10 to 1. This ratio is considered fairly standard in U.S. TV production, even with dramatic shows and other fairly complex productions. It is low, however, by German standards.

There are six TV studios at the Freiman production center of the Bayerische Rundfunk. One of these is generally in use each day for *Telekolleg*. At this rate, a maximum of some 240 lessons could theoretically be taped in a year; actually about 200 are produced because some days are lost due to scheduling of other more urgent Rundfunk productions.

C. OF SPECIAL NOTE

The success of *Telekolleg* must be viewed in the light of certain special circumstances which may not obtain elsewhere:

1. The instructional system into which *Telekolleg* was integrated was centralized and state-wide, so that a large population could be immediately served by a single curriculum and instructional approach without having to make the offering so general that it could serve only supplementary purposes.
2. *Telekolleg* televisions lessons were produced by a television network with twenty years experience in planning, producing, scheduling, and budgeting, so that all of these functions could operate well and efficiently.

3. *Telekolleg*, by and large, answers the need of people who are already motivated to seek further education, and offers a new route through the same curriculum culminating in the same examination as the state career education schools, thus offering a second chance at the same goal for many who have failed before.
4. The German state or regional broadcasting networks, operating as arms of the state, normally undertake a far broader social and civic responsibility than we are used to seeing in our commercial networks. This explains how such a project as *Telekolleg* could have been conceived and initiated by broadcasters, rather than by local educators or by educational officials of the federal government.

Case Study #4: *The Advocates*

(NOTE: Our survey of *The Advocates* was much briefer than for the other three programs. As a consequence, this summary is much shorter and sketchier than the others.)

A. KEY FINDINGS

The following components appear to have been essential to the success of *The Advocates* as a public affairs television program:

1. Developing a new approach to public affairs panel shows, by allowing systematic confrontation of opposing views, rather than sporadic questioning.
2. Establishing staff research and production teams representing each advocacy side of each issue, thereby allowing: (a) detailed analysis of each issue; (b) careful selection of the most effective witnesses for each side; (c) preparation of filmed material and visual aids to strengthen each side's case.
3. Operating with two separate production units, in Boston (WGBH) and Los Angeles (KCET) to broaden geographic coverage and encourage interaction and competition. Furthermore, both stations had substantial TV production experience, and could call on fully qualified production staffs.

B. *THE ADVOCATES* MODEL

The Advocates was developed as an attempt to make public affairs panel shows more effective. Most such programs cannot explore in detail the nature of the differences of views about issues. Because there is no systematic confrontation or cross-examination, viewers are often frustrated in the effort to find out about the merits of opposing views.

The Advocates, which was conceived in the spring of 1969 by people associated with an existing panel show on Channel 2 (WGBH) in Boston, can well be called the first attempt to bring confrontation techniques to this type of public affairs programming.

The basic elements of the approach as developed by WGBH and KCET programming and production staffs were:

- o Identifying major current news issues that would lend themselves to a confrontation format.
- o Identifying people who could act as effective advocates, witnesses, and resource people, combining continuity (moderators and advocates are generally the same people from show to show) and change (witness and resource people normally are used on a one-time basis).
- o Establishing an effective confrontation format with advocates leading their own witnesses and cross-examining opposition witnesses, with substantial use of films and visual aids to reinforce each side's case.
- o Setting up the research and production teams in Boston and Los Angeles on a confrontation basis. Each on-camera advocate has a four-man team to back him up by identifying the most effective arguments and witnesses for his side.
- o Planning for a variety of audience feedback mechanisms: telephone response, a computerized studio audience response with pre- and post-show opinions, mail surveys of the viewing audience, and letter response. (In fact, most of these measures were abandoned after the first season, and the primary feedback mechanism is now mail response.)

In the spring of 1969, WGBH staff applied for funding for the show from the Corporation for Public Broadcasting and the Ford Foundation. A total of $3 million was secured for a joint WGBH-KCET effort in the 1969-70 season. The executive producer in Boston decided to keep $600,000 in reserve for a second season. The balance of $2.4 million was divided between WGBH and KCET for a weekly 39 show program (reduced to 35 shows in the second season). Current production costs, including overhead, average about $40,000 per show

The executive producer approves all show proposals. Production is equally divided between WGBH and KCET staffs. Each staff has a producer, a moderator, two advocates, two advocate back-up staffs, and a public information office.

The production staff aims at keeping two months ahead of air time subject to change if important new broadcast possibilities arise.

The public information effort peaked in the fall of 1969, with a variety of newspaper and magazine articles, promotions through the 180-station educational TV network, etc. The effort has been maintained at a more modest level at each station, with a total full-time staff of two or three people.

The show has frankly sought out controversial issues, and has been very successful in stimulating audience response. It receives anywhere from 2000 to 60,000 letters per show. In addition to offering a section of public opinions on the issues, the audience mail is used selectively to make indicated changes in the program's approach or format.

C. OF SPECIAL NOTE

The success of *The Advocates* in airing a successful public affairs show within six months from the original proposal was due to certain special conditions:

1. The program could rely on the production staffs of two experienced stations.
2. The national educational network was readily available to provide air time.
3. The panel show format required far less research and development time than such complex ventures as *Telekolleg* and *Sesame Street*--there was no need for ancillary materials, animation sequences, teacher-student interaction, etc.
4. There was no specific instructional or educational content to transmit, other than improving the quality and depth of public debate on current issues.

APPENDIX I

TELEKOLLEG

Further descriptive detail on characteristics of the *Telekolleg* system is contained in this section.

1. CURRICULUM

The *Telekolleg* curriculum includes fourteen courses. The eight basic courses, as shown in Table 1, are grouped into five series of 78 lessons each. The remaining six special courses add up to another 78 lessons, for a total of 468 lessons in all. Ten of the fourteen courses are required of candidates for the Mittlere Reife; four others are elective, and are usually taken by students with plans for entering an advanced technical school.

This is basically the existing curriculum of the Berufsaufbauschule, of which there are 82 in the state of Bavaria. These schools are one of several kinds of vocational training institutions which provide the non-academic Bavarian youth with various routes toward increased skills and usefulness in German industry. The learner may qualify for entrance into advanced trade schools within three years: two years of evening school and one year of full-time day attendance. This allows the student to maintain full-time employment, if necessary, for the larger part of the time. Its aim is clearly defined and well understood by the people.

The final examination of the Berufsaufbauschule taken at the end of 10, 11, or 12 years of school, depending on the particular educational route, is called the Fachschulreife (trade or technical school exam). Passing this exam qualifies the student to proceed to higher technical

schools for three to five years more career education. For this reason it is also called the middle exam or "Mittlere Reife." It is this state-administered final examination which *Telekolleg* is designed to train the student to pass, without the need of his actually attending a vocational schools.

The Bavarian educational structure, with its many kinds of secondary schools and educational paths, is very complex by our standards. Figure 1 presents this in a simplified form showing the flexibility in changing paths that is allowed. The Mittlere Reife (or its equivalent) is shown in the several places where it is encountered, leading to the various subsequent educational opportunities for which the learner is eligible if he successfully passes.

2. STUDENT ACTIVITIES

While some students devote full time to their *Telekolleg* courses, most of them are simultaneously employed. Hence, *Telekolleg* lessons are broadcast during evening hours. Each student is expected to spend at least one hour a day on each of his courses, a heavy schedule for a student taking three or four courses. Where students have been unsuccessful in their courses, it is generally considered to be due to lack of sufficient study. If a student takes three or four courses he may finish within two years time. Many students take three or four years; some will repeat courses when in their estimation they are not yet ready for the examination. Taking a course a second time costs them little extra, since they have already purchased their printed materials.

The entire curriculum is presented in a two-year cycle. Thus, a student may enter the program only every second year. To decrease the

Table 1

TEI-EKOLLEG Curriculum

	Basic Subjects	No. of Lessons	Required or Elective
1	German	78	R
2	English	78	R
3	Math (Algebra, Geometry)	78	R
4	History	52	
	Supplemented by --	78	R
5	Economic Geography	13	
6	Social Science	13	
7	Physics	65	
	Supplemented by	78	R
8	Chemistry	13	
	Sub Total	390	
	Special Additional Courses		
9	Biology	13	R
10	Technical Drawing	26	E
11	Economics and Bus. Management	13	R
12	Electrical Engineering	13	E
13	Chemical Engineering	5	E
14	Bookkeeping	8	E
	Sub Total	78	
	Grand Total	468	

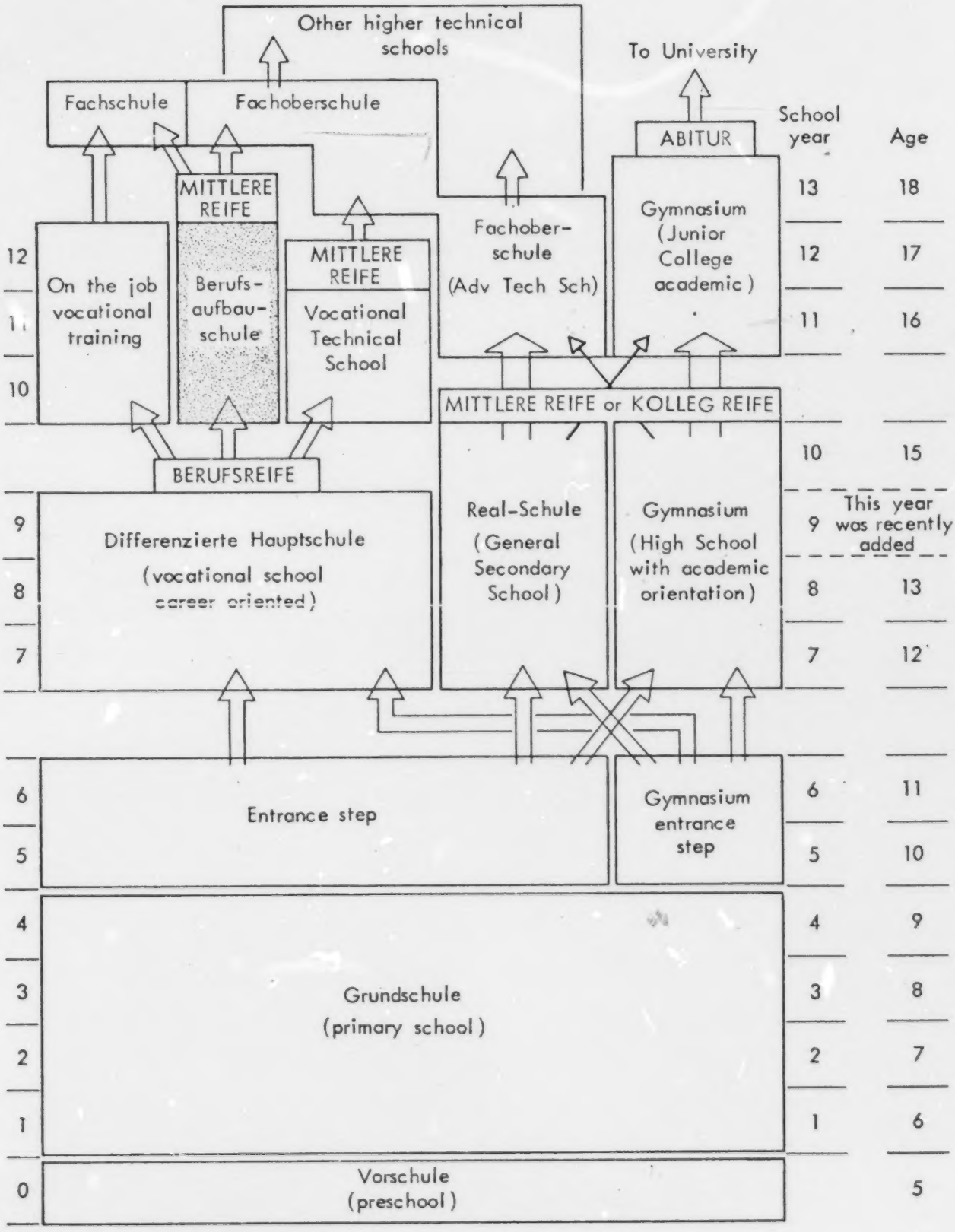


Fig. 5—Structure of the Baverian educational system

cycle to one year, twice as many lessons would have to be broadcast in any given period of time. This would either require the elimination of repeats, which are considered very valuable for the students, or it would require more broadcast time. More time would involve the reduction of other broadcast services, and at present the demand for *Telekolleg* is not considered great enough to justify withdrawing programs which are important to much greater numbers of viewers. Broadcast time can be very tight where only three channels exist for all broadcast television services.

Multi-media materials are so designed that the TV lessons take the lead, to be supplemented by the printed materials. This is the opposite approach to that taken by the British Open University, where the printed materials are considered primary and the TV programs are to play a secondary role. The British theory is that more time is spent studying the printed materials and they are always available, whereas TV programs are evanescent and occasionally missed entirely. *Telekolleg* producers, because they have a different kind of student, may have chosen to emphasize the visual medium, expecting it to have a greater appeal and motivational effect on the non-academic *Telekolleg* student.

Table 2 shows the *Telekolleg* schedule for a typical trimester (April-July 1971).

3. EVALUATION

An extremely valuable component of the *Telekolleg* system is the detailed on-going research which has been done to determine exactly what the program is accomplishing and what are its shortcomings.

Table 2

A TYPICAL SCHEDULE FOR *TELEKOLLEG*

(April-July Trimester 1971)

	Mon	Tues	Wed	Thur	Fri	Sat	Sun
6:00 p.m.						German (repeat)	German (repeat)
6:30 p.m.	History (repeat)	English (repeat)	Biology	Tech. Drawing (repeat)	Physics	History	Physics (repeat)
7:00 p.m.	English	Math.	Tech. Drawing	German			Technical Drawing
7:30 p.m.				Math. (repeat)			
8:15 p.m.	English (repeat)						
8:45 p.m.	History (repeat)						

Evaluation of the pedagogical approach used in *Telekolleg* revealed several important factors which have been used to direct revision of earlier lesson material, and incorporated into the planning of the second *Telekolleg* series.

It was found, for instance, that the content of the TV lesson should at least be summarized, if not reproduced in full in the printed materials. This was needed, probably, because of the inaccessibility of the TV lessons for review. After a lesson had been once broadcast and repeated once or twice, it was unavailable to the student for two year's time -- until it appeared again in the next course or program cycle.

It was also determined that the printed materials should contain some preview material in the nature of exercises to be done in advance of viewing the television lessons to which they refer. This would prepare the student for the learning to come, motivate him to want it, probably partly by making him dissatisfied with his present level of knowledge or skill in the particular subject area.

It was found that many *Telekolleg* students did not learn as much or as readily as they should have been able to, and this was diagnosed as lack of sufficient time devoted to study. It was decided to put more effort into motivating the student to study, both in the TV programs and in the Kolletag meetings.

Participants in *Telekolleg* were found, after research and evaluation, to be a somewhat different group than the target audience the producers originally had in mind. Out of ten assumptions that were made concerning the *Telekolleg* audience, and defining the target population for which the courses were designed, only the following four turned out to be correct:

(1) the participants were largely young people, (2) the majority of the participants had a short way to go to work and back, (3) the Kolletag days were attended largely by students with a low standard of education and by younger people who still accept the school-teaching methods, and (4) professional and vocational aims were named most often as the motive for participation, rather than general interest and educational improvement (see Table 3).

The fact that the nature of the student population in this broadcasting project could only be assumed, and not known in advance, is significantly applicable to any broadcasting system. Although in this case the eventual revision of expectations did not require serious revision of the teaching materials, other such projects might not be so fortunate. This experience supports the suggestion that pilot programs in single communities might well be undertaken in order to determine whether target audiences will actually be reached.

The fact that only 21 percent of the student population turned out to be female was a surprise to the *Telekolleg* people. In the second *Telekolleg* series the percentage was even a little bit less. It had been expected that a large number of women, confined to the home, would see in *Telekolleg* an opportunity to improve their general education, and that the female population might even exceed the male among the participants. Although this assumption seemed logical, the number of women participants was far smaller than expected.

Three general types of *Telekolleg* participants emerged, and these were classified as groups A, B, and C. Group A participants were motivated by the intention of preparing for the Mittlere Reife (the original target

Participant Characteristics	Number of participants in thousands (0 1 2 3 4 5 6 7)		
1. Age	Under 22	2.26 | 4.73	Over 22
2. Population of home community	Under 3000 (rural)	2.14 | 4.34	Over 3000 (urban)
3. Educational background	Elem. and Vocational school	5.18 | 1.80	Secondary school
4. Distance to work	Under 30 min (short)	4.13 | 1.46	Over 30 min (long)
5. Sex	Male	5.5 | 1.5	Female
6. Joint vewing of TV programs	Yes	1.46 | 5.48	No
7. Joint work on written material	Yes	.72 | 6.20	No
8. Reg. participation in Kollegtage	Yes	4.9 | 2.01	No
9. Part. in Kollegtage for vocational reasons	Yes	5.06 | 1.72	No
10. Can receive 3rd program	Yes	4.46 | 2.52	No

a. Some of the totals do not reach 7000 because some students failed to answer or their answers were ambiguous.

Table 3—Summary of first evaluation of audience data
(sample = 94% of total pop.) (ref 1 p 46)

audience of the planners). Group B participants participated in selected courses, did the work, and took exams, but were not interested in the Mittlere Reife. Group C participants purchased the printed materials and followed the lessons, but took no exams. The entire course of study was offered three times.

In Group A, women amounted to 21 percent in Course II and then dropped to 17 percent in Course III. In Group B, women were 38 percent in Course I and dropped to 33 percent in Course II. In Group C, the percentage of women was the highest, starting at 43 percent and dropping to 39 percent. These figures show that women seemed to be more interested in general education than in certification. They also indicate how the general percentage of women participants tended to drop off a few percentage points as *Telekolleg* proceeded into the second and third course of study.

It is very interesting to note that the percentage of women enrolled in *Telekolleg* is very close to the percentage of women in the regular secondary evening schools and vocational schools. In the Berufsaufbauschule, for example, secondary-level vocational schools usually attended by young people in their 10th, 11th, and 12th years of schooling, women constitute about 22 percent. In the Abendgymnasium (evening secondary school, academically oriented, years 7-10), the percentage is about 20. In the third type of secondary school, the Abendrealschule (which is a combination of academic and vocational orientation), the percentage of women is a little over 17. Women constitute about 24 percent of college students in Bavaria. Thus, it is seen that the percentage of women participating in *Telekolleg* is approximately the same as the percentage taking part in any of the types of conventional adult education in the evening school programs.

The conclusion of the evaluators is that:

> Female participants have a disliking for exams and prefer selecting various *Telekolleg* subjects (the most popular ones are English, history and German). They use the information provided by *Telekolleg* only to add to their general knowledge. In view of this aspect, their main interests focus on the so-called humanities subjects, including the English language. Science, on the other hand, is considered to be specialized knowledge and thus linked with vocational aims. The opposite of these aspects regarding women applies to the male participants.
>
> (Ref. 2, p. 27)

The presence of children in the home was found to be inversely related to participation in *Telekolleg*, especially among those who were in Group A. Sixty-three percent of these had no children, another 20 percent had only one, and less than 17 percent had two or more. These figures apply to both sexes; it can be assumed that they would be even more extreme if they concerned women alone. Table 4 summarizes this data for all three groups, male and female combined.

Table 4

	Group A	Group B	Group C
Single	49	35	29
Married	49	57	62
Widowed or divorced	2	8	9
	100	100	100
No children	63	57	54
Only one child	20	21	21
Two or more	17	22	25
	100	100	100

Whether these differences are due to a greater motivation on the part of childless people, or whether motivation is the same but the presence of a family interferes with participation, cannot be determined from available evidence. Possibly both factors contribute.

There was an interesting relationship between married participants and the professional activity and educational background of the marriage partner. In about half of the cases both husband and wife worked, a percentage that is much higher than that in the general population.

> This in turn permits the assumption that these are participants with a substantial motivation for social improvement. It is also possible that wives with better professional qualifications and accordingly able to earn more money do not give up their jobs when getting married. In such cases the other married partner will attempt to make up the difference in qualification by means of participating in *Telekolleg*, or at least to make the qualification gap smaller.
>
> (Ref. 3, p. 35)

This effect is observable among participants of Groups B and C, but is most obvious in Group A.

Because of the direct relevance of the *Telekolleg* experience with women participants, a further section of a report by the Internationales Zentralinstitut will be of interest.

> *Telekolleg* has not succeeded in activating the desire for further education in the female segments of the potential audience in the same way as in the male segments. There are several possible explanations for this. First, it has already been pointed out that *Telekolleg* is linked more closely to training in some certain vocations than in others. Accordingly, *Telekolleg* is not, or at least does not appear to be, oriented toward typical professions for women. Thus, there is only a relatively small number of female participants. Women belonging to certain social classes consider their vocational career to be merely a transition period between school years and marriage. It is

> regarded as important to start earning and to save money as soon as possible, and not to partake in studies, which then seem useless for married life and family life. More efforts on the part of the responsible authorities are required, than merely providing a number of courses, in order to do away with this traditional opinion and viewpoint and to suggest the idea of further education for women. This, however, can only be carried out by means of the carefully planned cooperation of social and pedagogical institutions.
>
> (Ref. 1, p. 54)

4. RESULTS

Offering a new, and for many, a much more convenient path to the Mittlere Reife, *Telekolleg* enrolled in 1969, the third year of the project, nearly 10,000 full participants. This was approximately the same number as the total of all students who were attending the 82 Berufsaufbouschule in all of Bavaria.

Grade averages showed that *Telekolleg* students did as well or better on exams than their counterparts at the traditional schools. When in 1969 it came time for the first group to sit for the Mittlere Reife, 3,000 *Telekolleg* students appeared, and of this group 96.5 percent passed, a total of 2,878 individuals. This was a larger number than all the successful examinees of all 82 Berufsaufbauschule put together.

There is evidence that *Telekolleg* is serving some other audiences that had not been considered targets in the original planning. Parents who watch the programs have reported in large numbers that *Telekolleg* had helped make them more knowledgeable about their children's school curriculum, more able to assist in children's homework and to feel more closely related to the school. Also, a large number of teachers are

reported to be watching *Telekolleg* programs, especially the particular subjects that they teach, in order to stay up to date on the information they are handling, and to observe other teachers in action and thus improve their own teaching methods.

The fact that the original publicity for *Telekolleg* in the last three months of 1969 generated 30,000 responses would indicate the high level of interest in this type of education. This could be interpreted to mean that three times as many people as then attended the Berufsaufbauschule would like to do so, but were unable or not sufficiently motivated to overcome existing obstacles. The fact that 8,500 showed up at the first Kellotag indicates that only about a quarter to a third of the demand was actually met (or that only this many people were strongly enough motivated). Less than 3,000 people then passed the Mittlere Reife, yet this effectively doubled the output of the Berufsaufbauschule. It would seem, therefore, that the potential number of participants for *Telekolleg* may be five to ten times greater than the number who are already taking part, and the output of the Berufsaufbauschule would be increased many times by extending the student population of the *Telekolleg*.

a. The Advantages of Repeating Programs. The Bayerischer Rundfunk provides three TV program services simultaneously. There are actually three networks ("Sendernetz"); each program is broadcast on different TV channels in different parts of the state. Educational programs are broadcast on the first and third network, and in the case of *Telekolleg*, on both. The fact that the repeat of each program is carried on the alternate channel makes it possible not only for those who couldn't see one broadcast because of time conflicts, to see the other, but it also

assures that those who do not receive one of the channels very well can still view the program. Successive research studies showed 64 and later 73 percent of *Telekolleg* participants able to receive both channels I and III, and it is believed that a large number of them viewed each program twice. This indicates that the opportunity to see a program more than once is a great advantage to this kind of study, and program repetition is probably an important component of home-based ITV systems.

b. Flexibility. A characteristic of *Telekolleg* which is considered very significant by its administrators is its flexibility and adaptability to changing needs in education. Conventional schools, in Bavaria as anywhere else, respond very slowly to new findings in learning psychology, teaching method, or the need to alter curriculum. New TV lessons, for example, can be prepared far sooner than classroom teachers can be retrained, since only a few experts are needed for lesson planning and development. The constant on-going research and evaluation which is an important part of *Telekolleg* insures continual feedback of information on the effectiveness of the materials and their relevance to the needs of the participants. "Nowhere else in the whole field of education," writes Dr. Walter Fuchs, *Telekolleg* Director, "can the obsolete be so quickly thrown overboard, the latest findings of educational psychology or new subject matter be so readily incorporated than in this multi-media system."

If this is true, it could be very significant. The fact that the standard Berufsaufbauschule curriculum is followed, however, would seem to indicate the the Ministry of Education would need to ratify any subject-matter changes, and this might tie the process up in some of the red

tape that slows changes in the schools. Changes in method, however, techniques of presentation, student response, and the like, being entirely the responsibility of the broadcasters, would undoubtedly lend themselves to prompt revision whenever indicated.

5. COST

Relative costs are difficult to obtain and because they often contain different components are often meaningless. Reports on *Telekolleg*, however, quote figures that show such a wide difference between the per-student costs of the television systems and conventional schools that it would seem that either could be quite inaccurate and still the comparison would favor *Telekolleg*. *Telekolleg* reports make the enthusiastic statement that "after one year's operation estimates show(ed) that *Telekolleg* students cost the state one-sixth of the sum spent so far by traditional methods of schooling to provide pupils with a similar standard of qualification." (Ref. 1, p. 41)

The Bavarian government spends 1070 DM ($290) per year on each elementary school pupil, 2240 DM ($610) for each Realschuler, 2280 DM ($620) for each student in Gymnasium. These costs are presumably based on some sort of average daily attendance, not on the number of graduates.

To compare *Telekolleg* costs with these, the annual total of those who passed the Mittlere Reife (only 30 percent of the full enrollment) was divided into the total annual cost. The resulting figure was 434 DM ($119). Whether this is a meaningful comparison is doubtful. No better figures are presently available, however. At least one can be sure that with an increase in the number of *Telekolleg* learners who successfully pass

the Mittlere Reife, the total costs will not rise in proportion, so the cost per successful examinee will be lower still.

Herbert Dordick, in a report and evaluation of *Telekolleg* (Ref. 6) estimates that the costs of planning production and broadcast of the TV programs was one-third or less of the total *Telekolleg* cost.

"Thus for every $1.00 spent in television productions, $2.00 to $2.50 were spent in creating and operating the system to make the TV lesson effective and stimulate feedback and, hopefully, learning."

6. SOURCE OF FUNDS

Telekolleg is supported by three organizations: (1) The Bayerischer Rundfunk, which initiated the project and is responsible for the preparation of the television and printed materials and the broadcast service, (2) the Bavarian Ministry of Education, which handles the corresponsence study aspect and the *Kollegtag*, and (3) the Volkswagen Foundation, which supplies part of the funds. The amounts of support are as follows:

Bayerischer Rundfunk

TV budget 16-20,000 DM per lesson — 6,300,000 DM
$143-$177/min. — ($1,750,000)

50% of this is direct cost, such as script, editors, presentation, free-lance designers, etc.

50% is indirect such as facilities, overhead, etc.

Budget for printed materials development
600 DM/lesson — 210,000 DM

(The costs of publication of the printed materials are undertaken by a set of commercial publishing houses: T. R. Verlagsunion, who recover costs and realize a profit by distributing the materials directly to the *Telekolleg* participants.)

The first *Telekolleg* budget covered the four years between the start of 1966 and the end of 1969. The total amount was 15 million DM or 3.75 DM million per year.

Rundfunk	7 million DM	$1.9 million
Ministry of Education	5 " "	1.37 "
Volkswagen Foundation	3 " "	.81 "
Total	15 " "	$4.08 "
Per Year	3.75 " "	$1.02 "

The on-going budget for this year and beyond will be about 250,000 DM annually, plus a broadcasting budget of 170,000 DM. The Ministry of Education budget for continuing the *Telekolleg*, the correspondence work and the examination schedule is some 450,000 DM per year.

The total of these figures is 870,000 DM. This will be reduced by some 100,000 DM since five other German states plus Austria and Switzerland will be contributing funds by leasing the TV tapes.

7. *TELEKOLLEG II*

As a result of the success of *Telekolleg I*, *Telekolleg II* is now in the planning stages. This second *Telekolleg* has a different purpose: for its curriculum, when successfully completed, leads to the Abitur exam, which qualifies the student for entrance into a university (See Fig. 1). The curriculum is thus essentially that of the higher levels of Gymnasium roughly corresponding to junior college in America. It allows the academic student a second educational path by which to reach the university.

ANNOTATED BIBLIOGRAPHY AND LIST OF REFERENCES

1. *Multi-Media Systems, 11 Project Descriptions of Combined Teaching Systems in Eight Countries.* Internationales Zentralinstitut Für Jugend- und Bildungsfernsehen, 8 Munchen 2, Rundfunkplatz 1, 1969(?). English.

An excellent compendium of descriptive and evaluative data about specifically home-based instructional systems using television or radio as one of their components. A set of five fold-out charts compares the 11 systems in 30 different respects. Must reading for planners of home-based instructional systems.

2. Schardt, Alois, Hans Schiefele and Alfons Otto Shorb. *Telekolleg im Stundienprogram des Bayerische Rundfunks. Wissenschaftliche Begleit-untersuchung.* Heft 1 (*Telekolleg* in the education program of the Bavarian Broadcasting System. Scientific accompanying investigation. Vol. 1) German with summaries translated in English, Spanish, French, and Russian. Undated.

Source book for evaluation data. Contains all published data, detailed charts and statistical presentations, and evaluative comments by the researchers.

3. *Ibid.*, Vol. 2 (1970). Summaries translated.

4. *Ibid.*, Vol. 3 (1970). German only.

5. Fuchs, Walter R. *Telekolleg, A Multi-Media Instructional System.* Bayerischer Rundfunk Studienprogram. Mimeographed paper, 10 pages, undated. English.

A fine summary and presentation of the highlights of the *Telekolleg* program. Contains an excellent three pages on the national need which *Telekolleg* was designed to help fulfill. A two-page summary of this paper is also available.

6. Dordick, Herbert. *The Bavarian Telekolleg -- A Summary Report.* Information Transfer Corporation, Santa Monica, California. 1971. Unpublished, therefore not annotated here.

A film is available on *Telekolleg*, from the Zentralinstitut, of 20 to 30 minutes duration which shows excerpts from some of the

Telekolleg programs and outlines the progress of the project. It is called *Multi-Media Systems*.

Appendix II

STAGES AND COMPONENTS IN DEVELOPMENT OF TELEVISION-BASED EDUCATIONAL PROGRAMS: A SUMMARY CHECKLIST

I. Planning

A. Pre-planning--preliminary development of concepts, targets, potential core staff, financing sources.

B. Planning organization

1. Determination of planning resource requirements

2. Allocation of time needed for planning

3. Determination of planning task sequence

C. Planning tasks

1. Identification of target audience(s)

2. Specification of overall program objectives

- o Priorities of objectives
- o Desired effects (behavioral changes, skill training, etc.)

3. Overall system planning

- o Staff and consultant roles
  - o Educators, psychologists
  - o TV production staff
  - o Marketing experts
- o Resource allocation
  - o Total budget
  - o Budget allocations by system component and product
- o Liaison
  - o Sponsoring agencies
  - o Cooperating agencies (schools, employment)
  - o Suppliers and subcontractors (publishers, distributors)

- o Organizational planning
  - o Marketing and information
  - o Production and distribution
  - o Research and evaluation
  - o Ancillary services
  - o Technical services
  - o Business services

4. Curriculum planning
   - o Specification of detailed curriculum objectives
   - o Relating objectives to content and presentation
   - o Selecting subject matter and content
     - o For TV segments
     - o For collateral printed or audio materials
   - o Determining relative curriculum emphases
   - o Determining curriculum presentation strategy
     - o Number, sequencing, pace, length of TV segments
     - o Distribution and use of collateral material
     - o Supplementary presentation modes -- group instruction, tapes, discussions

5. Marketing
   - o Analyze characteristics of target audience
     - o Viewing habits
     - o Exposure to printed media
     - o Radio listening habits
     - o Substantive interests
   - o Develop marketing campaign
     - o Advertising
     - o Cooperation of community leaders, local and state agencies

- o Marketing plan for collateral material
- o Media relations
- o Direct mail

II. Development

1. Translating curriculum content specifications into written and filmed material
   - o Scripts
   - o Background footage requiring long lead times
   - o Collateral printed material
   - o Tapes or other materials
2. Setting up liaison machinery and organization
3. Making arrangements for feedback from audience, sponsors, experts
4. Making pilot program(s)
   - o Arrange for audience and expert response
   - o Pilot collateral printed material
   - o Special lead time or budget problems
5. Choosing distribution channels
   - o TV shows
   - o Printed materials
   - o Alternative (contingency) plans
6. Revision of program format, etc., after pilot run
   - o Time alloted for revision
   - o Special resource problems

III. Operations

A. Final production of initial shows

1. Collaboration with marketing and formative evaluation
2. Internal review

B. Broadcasting shows and distributing collateral materials

1. Review performance of local TV stations and distribution channels for collateral materials

2. Collaboration with schools, community agencies, etc.

C. Service audience through collateral materials, feedback arrangements, etc.

D. Marketing operations

IV. Evaluation

A. Design evaluation system

1. Process evaluation, monitoring program progress

2. Formative evaluation of pilot efforts -- by audience, sponsors, experts

3. Summative evaluation of program's effects on target audience

B. Conduct pilot formative evaluation

1. Choose sample audience and administer tests

2. Feed results to production staff

C. Program monitoring

1. Management system for verifying progress on schedule

2. Liaison with sponsoring agencies

D. Conduct summative evaluation

1. Presentation of summative evaluation results

2. Feedback to next cycle of planning and production